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Unit–1

Scope of Managerial Economics

Notes

Structure

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1.1. Introduction

For most purposes economics can be divided into two broad categories, microeconomics and macroeconomics. Macroeconomics as the name suggests is the study of the overall economy and its aggregates such as Gross National Product, Inflation, Unemployment, Exports, Imports, and Taxation Policy, etc.

Macroeconomics addresses questions about changes in investment, government spending, employment, prices, and exchange rate of the rupee and so on. Importantly, only aggregate levels of these variables are considered in the study of macroeconomics. But hidden in the aggregate data are changes in output of a number of individual firms, the consumption decision of consumers like you, and the changes in the prices of particular goods and services. Although macroeconomic issues are important and occupy the time of media and command the attention of the newspapers, micro aspects of the economy are also important and often are of more direct application to the day to day problems facing a manager. Microeconomics deals with individual actors in the economy such as firms and individuals. Managerial economics can be thought of as applied microeconomics and its focus is on the interaction of firms and individuals in markets.

When you read a newspaper or switch on a television, you hear economic terminology used with increasing regularity. For a manager, some of these economic terms are of direct relevance and, therefore, it is essential to not only understand them but also apply them in relevant situations. For example, GDP growth rate

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could impact the product a manager is marketing, change in money supply by the RBI could impact inflation and affect the demand for your product, fiscal deficit could affect interest rates and, therefore, investment spending by a manager, etc. The focus of managerial economics is on how the firm reacts to changes in the economic environment in which it operates and how it predicts these changes and devises the best possible strategies to achieve the objectives that underlie its existence.

The economy is the institutional structure through which individuals and firms in a society coordinate their desires. Economics is the study of how human beings in a society go about achieving their wants and desires. It is also defined as the study of allocation of scarce resources to satisfy individual wants or desires. The latter is perhaps the best way to broadly define the study of economics in general. The emphasis is on allocation of scarce resources across competing ends. You should recognize that human wants are unlimited and, therefore, choice is necessary.

Choices necessarily involve trade-offs. For example, if you wish to acquire an MBA degree, you must take time-off to devote to study. Your time has many uses and when you devote more time to study you are allocating it to a particular use in order to achieve your goal. Economics would be a most uninteresting subject if resources were unlimited and no trade-offs was involved in decisionmaking. There are many general insights economists have gained into how the economy functions. Economic theory ties together economists' terminology and knowledge about economic institutions. An economic institution is a physical or mental structure that significantly influences economic decisions. Corporations, Governments, markets are all economic institutions. Similarly cultural norms are the standards people use when they determine whether a particular activity or behaviour is acceptable. For example, Hindus avoid meat and fish on Tuesdays. This has an economic dimension as it has a direct impact on the sale of these items on Tuesdays. Further, economic policy is the action usually taken by the government, to influence economic events. And finally, economic reasoning helps in thinking like an economist. Economists analyze questions and issues on the basis of trade-offs, i.e., they compare the cost and the benefits of every issue and make decisions based on those costs and benefits.

The market is perhaps the single most important and complex institution in our economy. A market is not necessarily a physical location, but a description of any state that involves exchange. The exchange could be instantaneous or it could be over time, i.e., exchange which is agreed today but where the transaction takes place, say after 3 months. You will learn in this course the myriad functions that markets perform, most significantly bringing buyers and sellers together. Markets could be competitive or monopolistic, with a large number of firms or a small number of firms, with free entry and exit or government licensing restricting entry of firms and so on. The major point is that firms operate in different types of markets and use the well-established principles of managerial economics to improve profitability. Managerial economics draws on economic analysis for such concepts as cost, demand, profit and competition. It attempts to bridge the gap between the purely analytical problems that intrigue many economic theorists and the day-to-day decisions that managers must face. It offers powerful tools and approaches for managerial policy-making. It will be relevant to present here several examples illustrating the problems that managerial economics can help to address. These also explain how managerial economics is

an integral part of business. Demand, supply, cost, production, market, competition, price, etc. are important concepts in real business decisions.

1.2. Appropriate Definitions

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Managerial economics can be defined as the study of how to direct scarce resources in the way that most efficiently achieves a managerial goal.

According to McNair and Merriam, "Managerial economics is the use of economic modes of thought to analyze business situations." According to Prof. Evan J Douglas, 'Managerial economics' is concerned with the application of economic principles and methodologies to the decision-making process within the firm or organization under the conditions of uncertainty." Spencer and Siegel man define it as "The integration of economic theory with business practices for the purpose of facilitating decision-making and forward planning by management." According to Hailstones and Rothwel, "Managerial economics is the application of economic theory and analysis to practice of business firms and other institutions." A common thread runs through all these descriptions of managerial economics which is using a framework of analysis to arrive at informed decisions to maximize the firm's objectives, often in an environment of uncertainty. It is important to recognize that decisions taken while employing a framework of analysis are likely to be more successful than decisions that are knee jerk or gut feel decisions.

It is a very broad discipline in the sense that it describes useful methods for directing everything from the resources of a household to maximize household welfare to the resources of the firm to maximize profits. To understand the nature of decisions that confronts managers of firms, imagine that you are the manager of a company that makes computers. You must make a host of decisions to succeed as a manager. Should you purchase components such as disk drive and chips from the other manufacturers or produce them within your firm? Should you specialize in making of one type of computers or produce several types? How many computers should you produce and at what price should you sell them? How many employees should you hire, and how should you compensate them? How can you ensure that employee work hard? And produce quality products? How can the actions of the rival computer firms affect your decisions?

The key to making sound decisions is to know what information is needed to make an informed decision and then to collect and process the data. If you work for a large firm, your legal department can provide data about the legal ramifications of alternative decisions; your accounting department can provide tax advise and basic cost data; your marketing department can provide you with the data on the characteristics of the market for your product; and your firm's financial analysts can provide summary data for alternative methods of obtaining financial capital. Ultimately, however, the manager must integrate all of this information, process it, and arrive at a decision.

1.3. Fundamental Nature of Managerial Economics

A close relationship between management and economics has led to the development of managerial economics. Management is the guidance, leadership

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and control of the efforts of a group of people towards some common objectives. While this description does inform about the purpose or function of management, it tells us little about the nature of the management process. Koontz and O'Donnell define management as the creation and maintenance of an internal environment in an enterprise where individuals, working together in groups, can perform efficiently and effectively towards the attainment of group goals. Thus, management is:

Coordination

An activity or an ongoing process

A purposive process

An art of getting things done by other people.

On the other hand, economics as stated above is engaged in analyzing and providing answers to manifestations of the most fundamental problem of scarcity. Scarcity of resources results from two fundamental facts of life:

Human wants are virtually unlimited and insatiable, and

Economic resources to satisfy these human demands are limited.

Thus, we cannot have everything we want; we must make choices broadly in regard to the following:

What to produce?

How to produce? and

For whom to produce?

These three choice problems have become the three central issues of an economy as shown in Fig. 1.1. Economics has developed several concepts and analytical tools to deal with the question of allocation of scarce resources among competing ends. The non-trivial problem that needs to be addressed is how an economy through its various institutions solves or answers the three crucial questions posed above. There are three ways by which this can be achieved. One entirely by the market mechanism, two, entirely by the government or finally, and more reasonably, by a combination of the first two approaches. Realistically all economies employ the last option, but the relative roles of the market and government vary across countries. For example, in India the market has started playing a more important role in the economy while the government has begun to withdraw form certain activities. Thus, the market mechanism is gaining importance. A similar change is happening all over the world, including in China. But there are economies such as Myanmar and Cuba where the government still plays an overwhelming part in solving the resource allocation problem. Essentially, the market is supposed to guide resources to their most efficient use. For example, if the salaries earned by MBA degree holders continue to rise, there will be more and more students wanting to earn the degree and more and more institutes wanting to provide such degrees to take advantage of this opportunity. The government may not force this to happen, it will happen on its own through the market mechanism. The government, if anything, could provide a regulatory function to ensure quality and consumer protection. According to the central deduction of economic theory, under certain conditions, markets allocate resources efficiently. 'Efficiency' has a special meaning in this context. The theory says that markets will produce an outcome such that, given the economy's scarce resources, it is impossible to make anybody better-off without making somebody else worse-off.

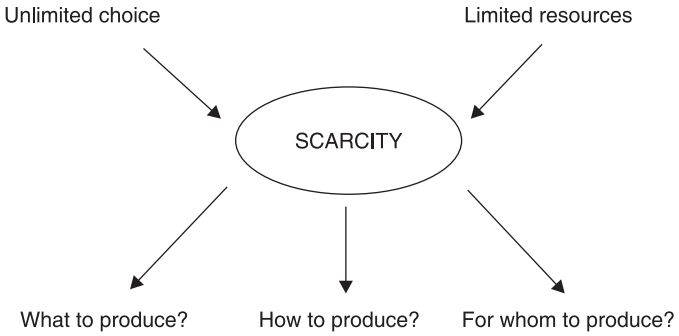

Fig. 1.1. Problem of choice.

In rich countries, markets are too familiar to attract attention. Yet, a certain awe is appropriate. Let us take an incident where Soviet planners visited a vegetable market in London during the early days of perestroika, they were impressed to find no queues, shortages, or mountains of spoiled and unwanted vegetables. They took their hosts aside and said: "We understand, you have to say it's all done by supply and demand. But can't you tell us what's really going on? Where are your planners and what are their methods?"

The essence of the market mechanism is indeed captured by the supply and demand diagram. At the place where the curves intersect, a price is set such that demand equals supply. There, and only there, the benefit from consuming one more unit exactly matches the cost of producing it. If output were less, the benefit from consuming more would exceed the cost of producing it. If output were higher, the cost of producing the extra units would exceed the extra benefits. So the point where supply equals demand is "efficient".

However, the conditions for market efficiency are extremely demanding—far too demanding ever to be met in the real world. The theory requires "perfect competition": there must be many buyers and sellers; goods from competing suppliers must be indistinguishable; buyers and sellers must be fully informed; and markets must be complete—that is, there must be markets not just for bread here and now, but for bread in any state of the world. (What is the price today for a loaf to be delivered in Timbuktu on the second Tuesday in December 2014 if it rains?) In other words, market failure is pervasive.

It comes in four main varieties:

(*a*) Monopoly: By reducing his sales, a monopolist can drive up the price of his good his sales will fall but his profits will rise. Consumption and production are less than the efficient amount, causing a deadweight loss in welfare.

(*b*) Public Goods: Some goods cannot be supplied by markets. If you refuse to pay for a new coat, the seller will refuse to supply you. If you refuse to pay for national defense, the "good" cannot easily be withheld. You might be tempted to let others pay. The same reasoning applies to other "non-excludable" goods such as law and order, clean air, and so on. Since private sellers cannot expect to recover the costs of producing such goods, they will fail to supply them.

(*c*) Externalities: Making some goods causes pollution: the cost is borne by

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people with no say in deciding how much to produce. Consuming some goods (education, anti-lock brakes) spreads benefits beyond the buyer, again, this will be ignored when the market decides how much to produce. In the case of "good" externalities, markets will supply too little; in the case of "bads" too much.

(*d*) Information: In some ways a special kind of externality, this deserves to be mentioned separately because of the emphasis placed upon it in recent economic theory. To see why information matters, consider the market for used cars. A buyer, lacking reliable information, may see the price as providing clues about a car's condition. This puts sellers in a quandary: if they cut prices, they may only convince people that their cars are rubbish. The labour market, many economists believe, is another such 'market for lemons'. This may help to explain why it is so difficult for the unemployed to price themselves into work. When markets fail, there is a case for intervention. But two questions need to be answered first. How much does market failure matter in practice? And can governments put the failure right? Markets often correct their own failures. In other cases, an apparent failure does nobody any harm. In general, market failure matters less in practice than is often supposed. Monopoly, for instance, may seem to preclude an efficient market. This is wrong. The mere fact of monopoly does not establish that any economic harm is being done. If a monopoly is protected from would be competitors by high barriers to entry, it can raise its prices and earn excessive profits. If that happens, the monopoly is undeniably harmful. But if barriers to entry are low, lack of actual (as opposed to potential) competitors does not prove that the monopoly is damaging: the threat of competition may be enough to make it behave as though it were a competitive firm. Many economists would accept that Microsoft, for instance, is a near-monopolist in some parts of the personal-computer software business yet would argue that the firm is doing no harm to consumers because its markets remain highly contestable. Because of that persistent threat of competition, the company prices its products keenly. In this and in other ways it behaves as though it were a smaller firm in a competitive market.

Even on economic grounds (never mind other considerations), there is no tidy answer to the question of where the boundary between state, i.e., governments and market should lie. Markets do fail because of monopoly, public goods, externalities, lack of information and for other reasons. But, more than critics allow, markets find ways to mitigate the harm and that is a task at which governments have often been strikingly unsuccessful. All in all, a strong presumption in favour of markets seems wise. This is not because classical economic theory says so, but because experience seems to agree. And as stated above, the real world seems to be moving in the direction of placing more reliance on markets than on governments.

1.4. Scope of Managerial Economics

From the point of view of a firm, managerial economics, may be defined as economics applied to "problems of choice" or alternatives and allocation of scarce

resources by the firms. Thus managerial economics is the study of allocation of resources available to a firm or a unit of management among the activities of that unit. Managerial economics is concerned with the application of economic concepts and analysis to the problem of formulating rational managerial decisions. There are four groups of problem in both decisions-making and forward planning.

Resource Allocation

Scarce resources have to be used with utmost efficiency to get optimal results. These include production programming and problem of transportation, etc. How does resource allocation take place within a firm? Naturally, a manager decides how to allocate resources to their respective uses within the firm, while as stated above, the resource allocation decision outside the firm is primarily done through the market. Thus, one important insight you can draw about the firm is that within it resources are guided by the manager in a manner that achieves the objectives of the firm.

Inventory and Queuing Problem

Inventory problems involve decisions about holding of optimal levels of stocks of raw materials and finished goods over a period. These decisions are taken by considering demand and supply conditions. Queuing problems involve decisions about installation of additional machines or hiring of extra labour in order to balance the business lost by not undertaking these activities.

Pricing Problem

Fixing prices for the products of the firm is an important decision-making process. Pricing problems involve decisions regarding various methods of prices to be adopted.

Investment Problem

Forward planning involves investment problems. These are problems of allocating scarce resources over time. For example, investing in new plants, how much to invest, sources of funds, etc.

1.5. Study of Managerial Economics

Study of managerial economics essentially involves the analysis of certain major aspects like:

(a) Demand Analysis, Estimation and Forecasting

A business firm is an economic organization, which is engaged in transforming productive resources into goods that are to be sold in the market. A major part of managerial decisions depend upon accurate estimates of demand. A forecast of sales in future aids the management in preparing production schedules and employing resources. It will help the management to strengthen its market position and profit base. It includes demand determinants, demand forecasting, etc.

(b) Cost and Production Analysis

Cost estimates are very important while taking decisions. The different factors that cause variations in the cost should be considered while planning. The chief topics

included under cost and production analysis are cost concepts and classifications, cost output relationship, economies and diseconomies of scale, production functions and cost control.

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(c) Pricing Decisions, Policies and Practices

Pricing is very important area of managerial economics. In fact price is the genesis of the revenue of a firm and as such the success of the firm largely depends upon the correctness of the price decisions taken by the firm. The important aspects dealt with under this area are: Price determination in various market forms, Pricing methods, Differential pricing, Product-line pricing and Price forecasting.

(d) Profits Management

Business firms are generally organized for the purpose of making profits and in the long run, profits provides the chief measure of success. In this connection, an important point worth considering is the element of uncertainty existing about profits because of variations in costs and revenues which in turn are caused by factors both internal and external to the firm. If knowledge about the future is perfect, profit analysis would have been a very easy task. However, in the world of uncertainty, expectations are not always realized so that profit planning and measurement constitute the difficult area of managerial economics. The main topics dealt with are: cost of capital, Rate of return and selection of projects, important aspects covered under this area are: Nature and Measurement of Profit, Profit Policies and techniques of Profit Planning like Break-even Analysis.

(e) Capital Management

Of the various types and classes of business problems, the most complex and troublesome for the business manager are likely to be those relating to the firm's capital investments. Relatively large sums are involved, and the problems are so complex that their disposal not only requires considerable time and labour but is a matter for top level decision. Briefly capital management implies planning and control of capital expenditure.

Conclusion

Demand analysis and forecasting help a manager at the earliest stage for choosing the product and planning output levels. A study of demand elasticity goes a long way in helping the firm to fix prices for its products. The theory of cost also forms an essential part of this subject. Estimation is necessary for making output variations with fixed plants or for the purpose of new investments in the same line of production or in a different venture. The firm works for profits and optimal or near maximum profits depend upon accurate price decisions. Theories regarding price determination under various market conditions enable the firm to solve the price fixation problems. Control of costs, proper pricing policies, break-even analysis, alternative profit policies are some of the important techniques in profit planning for the firm which has to work under conditions of uncertainty. Thus managerial economics tries to find out which course is likely to be the best for the firm under a given set of conditions.

1.6. Managerial Economics and Other Disciplines

Notes

Managerial economics is linked with various other fields of study like:

(a) Microeconomic Theory

As stated in the introduction, the roots of managerial economics spring from microeconomic theory. Price theory, demand concepts and theories of market structure are few elements of microeconomics used by managerial economists. It has an applied bias as it applies economic theories in order to solve real world problems of enterprises.

(b) Macroeconomic Theory

This field has little relevance for managerial economics but at least one part of it is incorporated in managerial economics, i.e., national income forecasting. The latter could be an important aid to business condition analysis, which in turn could be a valuable input for forecasting the demand for specific product groups.

(c) Operations Research

This field is used in managerial economics to find out the best of all possibilities. Linear programming is a great aid in decision-making in business and industry as it can help in solving problems like determination of facilities on machine scheduling, distribution of commodities and optimum product mix, etc.

(d) Theory of Decision-Making

Decision theory has been developed to deal with problems of choice or decision-making under uncertainty, where the applicability of figures required for the utility calculus are not available. Economic theory is based on assumptions of a single goal whereas decision theory breaks new grounds by recognizing multiplicity of goals and persuasiveness of uncertainty in the real world of management.

(e) Statistics

Statistics helps in empirical testing of theory. With its help, better decisions relating to demand and cost functions, production, sales or distribution are taken. Managerial economics is heavily dependent on statistical methods.

(f) Mathematics

Mathematics is yet another tool-subject closely related to managerial economics. This is because managerial economics is metrical in character estimating various economic relationship, predicting relevant economic quantities and using them in decision-making and forward planning. A knowledge of geometry, trigonometry and algebra is not only essential but certain mathematical tools and concepts such as logarithms and exponentials, vectors, determinants and matrix algebra and above all calculus differentials are the hand-maids.

(g) Management Theory and Accounting

Maximization of profit has been regarded as a central concept in the theory of the firm in microeconomics. In recent years, organization theorists have talked about "satisfying" instead of "maximizing" as an objective of the enterprise. Accounting data and statements constitute the language of business. In fact the link is so close

that "managerial accounting" has developed as a separate and specialized field in itself.

1.7. Economic Analysis

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Economic activity is the constant effort to match ends to means because of scarcity of resources. The optimal economic activity is to maximize the attainment of ends, the means and their scarcities or to minimize the use of resources, given the ends and their priorities. Decision-making by management is truly economic in nature because it involves choices among a set of alternatives—alternative courses of action. The optimal decision-making is an act of optimal economic choice, considering objectives and constraints. This justifies an evaluation of managerial decisions through concepts, precepts, tools and techniques of economic analysis of the following types:

(a) Micro- and Macro-analysis

In micro-analysis the problem of choice is focused on single individual entities like a consumer, a producer, a market, etc. Macro-analysis deals with the problem in totality like national income, general price level, etc.

(b) Partial and General Equilibrium Analysis

To attain the state of stable equilibrium, the economic problem may be analyzed part by part—one at a time—assuming "other things remaining the same." This is partial equilibrium analysis. In general equilibrium analysis the assumption of "given" or "other things remaining equal" may be relaxed and interdependence or interactions among variables may be allowed.

(c) Static, Comparative Static and Dynamic Analysis

This is in reference to time dimension. A problem may be analyzed—allowing no change at a point of time (static)—allowing once for all change at a point of time (comparative static)—allowing successive changes over a period of time (dynamic).

(d) Positive and Normative Analysis

In positive economic analysis, the problem is analyzed in objective terms based on principles and theories. In normative economic analysis, the problem is analyzed based on value judgment (norms). In simple terms, positive analysis is 'what it is' and normative analysis is 'what it should be.' For example, CEOs in private Indian enterprises earn 15 times as much as the lowest paid employee is a positive statement, a description of what is. A normative statement would be that CEOs should be paid 4–5 times the lowest paid employee.

1.8. Basic Characteristics: Decision-Making

Managerial economics serves as 'a link between traditional economics and the decision-making sciences' for business decision-making. The best way to get acquainted with managerial economics and decision-making is to come face to face with real world decision problems.

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Tata's Vision 2000

Presently there are about 87 firms in the Tata empire. Of them, about 16 recorded losses in 1995–96. The Tata's companies that are in the limelight are TISCO, TELCO, ACC, Tata Exports and Tata Chemicals.

Contribution of bottom companies— In terms of turn-over: 35% of total of group.

20 companies— In terms of net profit: 0.2% of total sales of group.

— In terms of assets and net worth <1% of total sales of group.

The question is—Do such non-performers warrant an existence or will the group be better off if it could hive off the divisions, or else amalgamate them with other existing units?

On the three basics—Last two companies are way below the group providing 4.2% return on shareholders; 1.9% returns on capital employed.

Keeping these figures in mind, Tatas planned refocusing exercises like

- Divestment-mergers
- Amalgamations-takeovers.
- To create a learner and suggestive group with an estimated turnover of 1,10,000 crores by 2000.
- From being production-led to being consumer and market-led; being up in top three in every segment.

Tata's "Vision 2000" is a group. Why not give someone else a chance to run your business more efficiently if you cannot do so? It makes better economic as well as business sense. But then, the ball is in the court of Tata's. The what and how to do is their prerogative.

The basic characteristics of managerial economics can now be enumerated as follows:

- It is concerned with "decision-making of an economic nature."
- It is "microeconomic" in character. This is because the unit of study is a firm. Managerial economics does not deal with entire economy as a unit of study.
- It largely uses that body of economic concepts and principles, which is known as "theory of the firm" or "economics of firm." In addition it also seeks to apply profit theory which forms part of distribution theories in economics.
- It is "goal oriented and prescriptive."
- Managerial economics is both "conceptual and metrical." It includes theory with measurement.
- Managerial economics belong to normative economics rather than positive economics.
- Macroeconomics is also useful to managerial economics since it provides an intelligent understanding of the environment in which business must operate. This understanding enables a business executive to adjust in the best possible manner with external forces over which he has no control but which plays a crucial role in the well being of his concern. The important topics are: business cycles, national income accounting and economic policies of

the government like those relating to taxation, foreign trade antimonopoly measures, labour relations, etc.

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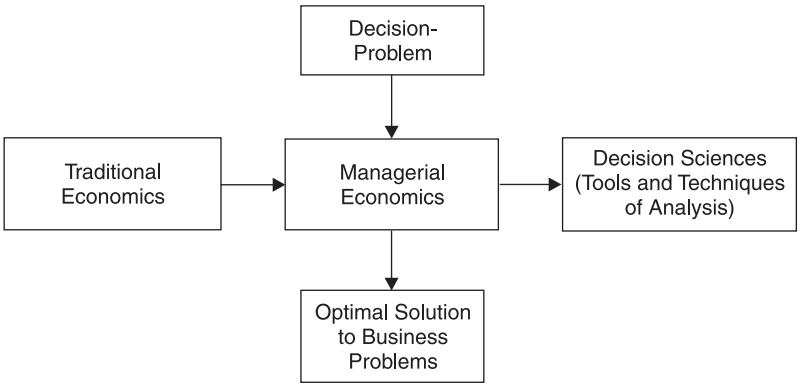

Fig. 1.2. Significance of managerial economics.

Managerial economics should be thought of as applied microeconomics, which focuses on the behaviour of the individual actors on the economic stage; firms and individuals.

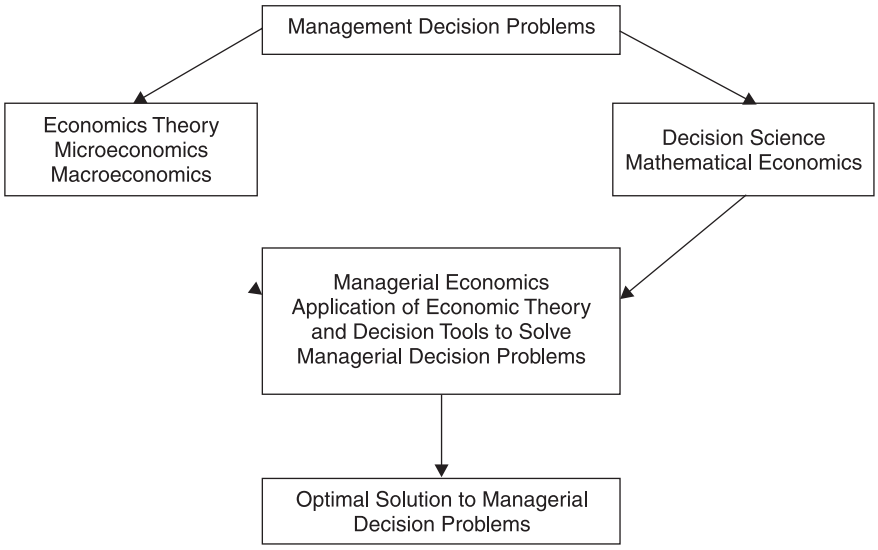

Fig. 1.3. Significance of managerial economics in decision-making.

A decision is simply a selection from two or more courses of action. The essence of economic decision is the solution to the economic problem. Once one of the available alternative actions is chosen, the economic problem is solved. The act of choice signifying solution of an economic problem is economic decision-making. A manager has to take several decisions in the management of business. Decision-making is a process and decision is the product of that process. Managerial economics is an evolutionary science; it is a journey with continuing understanding and application of economic knowledge—theories, models, concepts and categories in dealing with the emerging business/managerial situations and problems in a dynamic economy. It serves as a link between traditional economics and the decision-making sciences for business decision-making.

Managerial economics accomplishes several objectives. First, it presents those aspects of traditional economics which are relevant for business decision-making in real life. For this purpose it calls from economic theory the concepts, principles and techniques of analysis which have a bearing on the decision-making process. These are, therefore, adapted or modified with a view to enable the manager to take better decisions. Thus, managerial economics accomplishes the objectives of building a suitable kit from traditional economics.

Secondly, it also incorporates useful ideas from other disciplines such as psychology, sociology, etc. if they are found relevant for decision-making. In fact managerial economics take the aid of other academic disciplines having a bearing upon the business decisions of managers in view of various explicit and implicit constraints subject to which resource allocation is to be optimized.

Thirdly, managerial economics help in reaching a variety of business decisions in a complicated environment. A few examples are:

What products and services should be produced?

What inputs and production techniques should be used?

How much output should be produced and at what prices should it be sold?

What are the best sizes and locations of new plants?

When equipment should be replaced?

Fourthly, managerial economics makes a manager more competent model builder. Thus, he can capture the essential relationship which characterizes a situation while leaving out the cluttering details and peripheral relationships.

Fifthly, at the level of the firm where for various functional areas, functional specialists or functional department exists, e.g. finance, marketing personnel, production, etc. managerial economics serve as integrating agent by coordinating the different areas and bringing to bear on the decisions of each department or specialist the implication pertaining to other functional areas. It thus enables business decision-making not in water tight compartments but in an integrated perspective, the significance of which lies in the fact that the functional departments or specialists often enjoy considerable autonomy and achieve conflicting goals.

Finally, managerial economics take cognizance of the interaction between the firm and society and accomplishes the key role of business as an agent in the attainment of social and economic welfare. It has been realized that business apart from its obligations to shareholders, has certain social obligations/constraints subject to which business decisions are to be taken. In doing so, it serves as an instrument in further economic welfare of the society through socially oriented business.

To conclude, the usefulness of managerial economics lies in borrowing and adopting the tool kit from economic theory, incorporating relevant ideas from other disciplines to achieve better business decisions, serving as a catalytic agent in the course of decision-making by different functional departments/specialists at the firm level and finally accomplishing a social purpose through orienting business decisions towards social obligations.

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1.9. Role of a Managerial Economist in Business

Making decisions and processing information are the two primary tasks of managers. While we separate these two tasks for analytical purposes, in reality they are practically inseparable. That is in order to make intelligent decisions, managers must be able to obtain process and use information. The purpose of the economic theory is to help managers know what information should be obtained and how to process and use the information. Managerial economist has, therefore, gained an increasing importance in business in recent times. He can be very useful for successful management.

The task of organizing and processing information and the basic theory can take two general forms.

- Task of making special decisions by managers and
- General task of managers is to use readily available information to make a decision or carry out a course of action that furthers the goals of the organization.

Specific Decisions

There are several specific decisions that managers have to take, e.g., whether or not to close down a branch of a firm that has recently been unprofitable; whether or not a store stay open more hours a day; or whether to pay for computing services rather than install an in house computer. After conducting a survey it has been found that managerial economist perform the following functions:

- Production scheduling
- Demand forecasting
- Market research
- Economic analysis of the industry
- Investment appraisal
- Security management analysis
- Advice on foreign exchange management
- Advice on trade
- Pricing and the related decisions
- Analyzing and forecasting environmental factors

General Tasks

Economic theory helps decision makers know what information is necessary to make intelligent decisions to find the correct solutions to a problem and to learn how to process and use that information. After obtaining the information or as much information as is economically feasible to obtain, the manager must analyze this information and use it in correspondence with the theoretical and statistical tools available to make the best decision possible under the prevailing circumstances. We find that business is influenced by two sets of decision factors:

(*a*) External factors (*b*) Internal factors

Business is influenced not only by what decisions are taken within the firm but also by the general business environment. The role of the managerial economist is to

understand these external factors and to suggest policies which the firm should follow to make the best use of these external and internal factors.

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External Factors

- The **most important** external factor is the **general economic** condition of the economy, such as level and rate of growth of national income, regional income distribution, influence of international factors on the domestic economy, the business cycle, etc. The managerial economist must obtain and process information with regards to these changes, advise the management regarding their likely effects on the operations of the firm and suggest possible ways to further the organization's goals.
- **Prospects of demand for the product:** Is there a change occurring in the purchasing power of the public in general or in some particular regions? Is the change in purchasing power a result of changes in population and migration or is it due to changes in real income of the people as a result of price level changes? Are fashions, taste and preferences undergoing any changes and thus affecting the demand for the product? A managerial economist tries to find out their answers and advises the firm accordingly.
- **Input cost:** The managerial economist also tries to find out if there is anything which is influencing the **input cost** of the firm. For example, what about the cost of labour in different regions and for different operations? What about the credit conditions in the market? Is there going to be some changes in the government credit policy? How different inputs can be combined to minimize the cost of production? And so on….
- **The market conditions** of raw material and finished product is also a subject of study by the managerial economist. He has to understand the nature of the market from which the firm is buying its raw material and of the market where it is selling its output. This understanding helps the managerial economist to recommend a pricing policy for successful management of the firm.
- Managerial economist can also help in the expansion of the **firm's share in the market.** He is to find out the opportunities and the policies which help in the expansion of the firm's share in local and internal markets. This he can do by understanding the nature and trend of demand.
- Managerial economics has to keep in touch with the government's economic policies and the central bank's monetary policies, annual budgets of the government, etc.

Internal Factors

The role of managerial economist in internal management is as important as his contribution towards the management of external factors. He helps in deciding about the production, sales and inventory schedules of the firm. He not only provides information regarding their present level but also forecasts their future trend.

Perhaps a managerial economist is used best to provide the pricing and profit policies. As the present day firms are often multi-product firms, a successful managerial economist tries to find for the firm the most profitable output mix and the best price for its various outputs, given the market conditions.

The firm also needs the help of managerial economist for its investment

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decisions. For this, he needs to forecast the return on the investment and the cost that the firm incurs by taking up the investment.

Thus, we find that managerial economist has a very significant role to play. He not only helps in the internal management but also analyses the external factors and also advises the firm regarding their likely effects.

In short, the first role of a manager is to recognize a problem or to see a possible way to further the goal of the organization and then to obtain and process information in order to make a decision or to reach a solution. His second task is to use readily available information to make a decision or carry out a course of action that furthers the goals of organization. Successful managers know how to pick out the useful information from the vast amount of information they receive. In all these roles of a manager, the knowledge of managerial economics is extremely helpful.

Though at one point of time or other, managerial economist has to take each one of the specific decisions mentioned above, the decisions most commonly undertaken are the analysis of competing firms, sales forecasting and market research. This is done in order to keep the firm in a competitive position vis-â-vis other firms in the market. In addition the managerial economist also undertakes the job of economic intelligence, which involves obtaining and processing information regarding the likely effects of changes in government policies, tax rate structure, exchange and tariff rates, etc. Though the managerial economists in general perform the above mentioned functions, the degree to which they participate in overall management and the extent to which they pursue these functions vary from firm to firm.

1.10. Responsibility of a Managerial Economist

As mentioned above managerial economist has a role to play. Let us now find out what are his responsibilities towards his job?

The most important obligation of a managerial economist is that his objectives coincide with that of the business. Since in most of the cases the firms try to maximize profits on their invested capital, the managerial economist should also help in achieving this goal. So long as he maintains the conviction and helps in enhancing the ability of the firm to maximize profits he will be a successful managerial economist.

The other most important responsibility of a managerial economist is to make forecasts as accurate as possible. We know that every decision, a management takes normally has implications beyond the present, while; future is rather uncertain. It is, therefore, necessary and obligatory for a managerial economist to make future forecast in such a manner that the risks involved in the uncertainties of future are minimized for the firm. He will have to make these forecasts on the basis of data on the market conditions, the general economic environment, the government policies, etc. For forecasting, he uses the techniques of probability. A managerial economist is supposed to forecast the trends and shifts in the activities of importance to the firm be it sales, profits, demand, cost, etc. Once such a forecast along with its possible implications for the firms is available, the management can follow a more orderly course of business planning. If a managerial economist can keep on providing successful forecasts at the required time, he is bound to be a successful executive. Here a couple of important points need be mentioned.

First, if the managerial economist finds that due to some sudden and unaccounted factors, the presented forecast has undergone a change, it is his duty to work out the new forecast and present it at the earliest possible time. By drawing timely and prompt attention to changes in forecasts he serves well both the management and his own interest.

Secondly, a managerial economist's caliber is generally judged by his ability to obtain necessary information quickly by personal contacts rather than by lengthy research from either the readily available sources or obscure reference sources. Though thorough familiarity with reference sources and material is essential, yet it is even more important that he knows from where to get the additional information quickly. He must, therefore, personally know those individuals who are specialists in the area of his concern. For this he needs to join professional associations and take active interest in them.

Finally, the contribution of a managerial economist will be adequate only when he is a member of full status in the business team. He must be ready to take up challenging tasks. Whenever some special assignments come to him, he should be ready to undertake them with full seriousness. It is for the managerial economist himself that he makes his services indispensable and most sought after, both with the help of his ability, training and experience as well as his capacity to win continuing support for himself and his professional ideas. For the latter, a necessary condition is that he can put even the most sophisticated ideas in the easiest form in common language and in a convincing manner.

In short, there is a growing realization that they can significantly contribute to the working and growth of firms. However, a lot depend upon managerial economists themselves as to how they project themselves.

1.11. Summary

- For most purposes economics can be divided into two broad categories, microeconomics and macroeconomics. Macroeconomics as the name suggests is the study of the overall economy and its aggregates such as Gross National Product, Inflation, Unemployment, Exports, Imports, and Taxation Policy, etc.
- Microeconomics deals with individual actors in the economy such as firms and individuals. Managerial economics can be thought of as applied microeconomics and its
- Managerial economics can be defined as the study of how to direct scarce resources in the way that most efficiently achieves a managerial goal.
- A close relationship between management and economics has led to the development of managerial economics. Management is the guidance, leadership and control of the efforts of a group of people towards some common objectives.
- By reducing his sales, a monopolist can drive up the price of his good his sales will fall but his profits will rise.
- A business firm is an economic organization, which is engaged in transforming productive resources into goods that are to be sold in the market. A major part of managerial decisions depend upon accurate estimates of demand. A forecast

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of sales in future aids the management in preparing production schedules and employing resources. It will help the management to strengthen its market position and profit base.

- Economic activity is the constant effort to match ends to means because of scarcity of resources. The optimal economic activity is to maximize the attainment of ends, the means and their scarcities or to minimize the use of resources, given the ends and their priorities. Decision-making by management is truly economic in nature because it involves choices among a set of alternatives—alternative courses of action.
- A decision is simply a selection from two or more courses of action. The essence of economic decision is the solution to the economic problem.
- Economic theory helps decision makers know what information is necessary to make intelligent decisions to find the correct solutions to a problem and to learn how to process and use that information.
- The most important obligation of a managerial economist is that his objectives coincide with that of the business.

1.12. Review Questions

1. Discuss the nature and scope of managerial economics.
2. "Managerial economics is the integration of economic theory with business practice for the purpose of facilitating decision-making and forward planning by manager." Explain and comment.
3. Define scarcity and opportunity cost. What role do these two concepts play in the making of management decisions?
4. Managerial economics is often said to help the business student integrate the knowledge gained in other courses. How is this integration accomplished?
5. Compare and contrast microeconomics with macroeconomics. Although managerial economics is based primarily on microeconomics, explain why it is also important for managers to understand macroeconomics?
6. Justify that managerial economics is economics applied in decision-making.
7. What is the role of managerial economics in preparing managers?
8. How is managerial economics related to different disciplines?

Unit–2

The Firm

Notes

Structure

2.1. Introduction
2.2. Objectives of the Firm
2.3. Profit as Business Objective
2.4. The Profit Maximization Principle
2.5. Satisfactory Level of Profits
2.6. Value Maximization
2.7. Alternative Objectives of Firms
2.8. Economic Objective
2.9. Non-economic Objectives
2.10. Social Responsibilities of a Business Firm
2.11. Summary
2.12. Review Questions

2.1. Introduction

The firm is an organization that produces a good or service for sale and it plays a central role in theory and practice of Managerial Economics. In contrast to non-profit institutions like the 'Ford Foundation', most firms attempt to make a profit. There are thousands of firms in India producing large amount of goods and services; the rest are produced by the government and non-profit institutions. It is obvious that a lot of activities of the Indian economy revolve around firms. One of the crucial determinants of a firm's behaviour is the state of technology. Technology imposes a limit on how much a firm can produce. It is the sum total of society's pool of knowledge concerning the industrial and agricultural arts. Production is any activity that transforms inputs into output and is applicable not only to the production of goods like steel and automobiles, but also to production of services like banking and insurance. The firm changes hired inputs into saleable output. An input is defined as anything that the firm uses in its production process. Most firms require a wide array of inputs. For example, some of the inputs used by major steel firms like SAIL or TISCO are iron ore, coal, oxygen, skilled labour of various types, the services of blast furnaces, electric furnaces, and rolling mills as well as the services of the people managing the companies. To give another example, the inputs in production and sale of "chaat" by a street vendor are all the ingredients that go into making of the "chaat", i.e., the stove, the "carrier", and the services of the vendor.

The inputs or the factors of production are divisible into two broad categories—

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human resources and capital resources. Labour resource and entrepreneurial resource are the two human resource inputs while land, man-made capital, forests, rivers, etc., are the capital resources. Thus the four major factors of production (FOP) are land, man-made capital, labour, and entrepreneur (organization) while the remuneration they get is rent, interest (capital rental), wage, and profit, respectively. The function of the firm, thus, is to purchase resources or inputs of labour services, capital and raw materials in order to convert them into goods and services for sale. There is a circular flow of economic activity between individuals and firms as they are highly interdependent. Labour has no value in the market unless there is a firm willing to pay for it. In the same way, firms cannot rationalize production unless some consumer is willing to buy their products. However, there is some incentive for each. Firms earn profits in turn satisfying the consumption demand of individuals and resource owners get wage, rent and interest payment.

In the process of supplying the goods and services that consumers demand, firms provide employment to workers and also pay taxes that government uses to provide service (education, defense) that firms could not provide at all or efficiently. Essentially a firm exists because the total cost of production of output is lower than if the firm did not exist. There are several reasons for lower costs. Firstly, long term contract with labour saves the transaction costs because no new contract has to be negotiated every time a labour is to be hired or given new assignment. Secondly, there are government regulations like price-control and sales taxes also saved by having the transaction within the firm. Recall that sales tax is levied for transaction between firms and not within firms. When transactions take place within a firm they may be cheaper and hence such savings decrease the total cost of production of an output. In other words, the existence of firms could be explained by the fact that it saves transaction costs. However, the size of the firm has to be limited because as the firms grow larger, a point is reached where the cost of internal transaction becomes equal to or greater than the cost of transaction between firms. When such a stage is reached, it puts a limit to the size of the firm. Further, the cost of supplying additional services like legal, medical etc. within the firm exceeds the cost of purchasing these services from other firms; as such services may be required occasionally.

Let us consider the size of different kinds of firms around us and try to understand the reasons for such differences. Why are service firms generally smaller than capital-intensive firms like SAIL, Maruti Udyog, and ONGC etc? What is the reason that a number of firms are choosing the BPO route? A part of the explanation must lie in the fact that it is cheaper to outsource than to absorb that activity within the firm. Consider a firm that needs to occasionally use legal service.

Under what conditions will it choose to hire a full-time lawyer and take her on its rolls and under what conditions will the firm outsource the legal activity or hire legal services on a case-bycase basis. Naturally, the answer depends upon the frequency of use for legal services. The transaction cost framework demonstrates that the firm will contract out if the cost of such an arrangement is lower and will prefer in-house legal staff when the opposite is true.

Firms are classified into different categories as follows:

(*a*) Private sector firms.

(*b*) Public sector firms.

(*c*) Joint sector firms.

(*d*) Non-profit firms.

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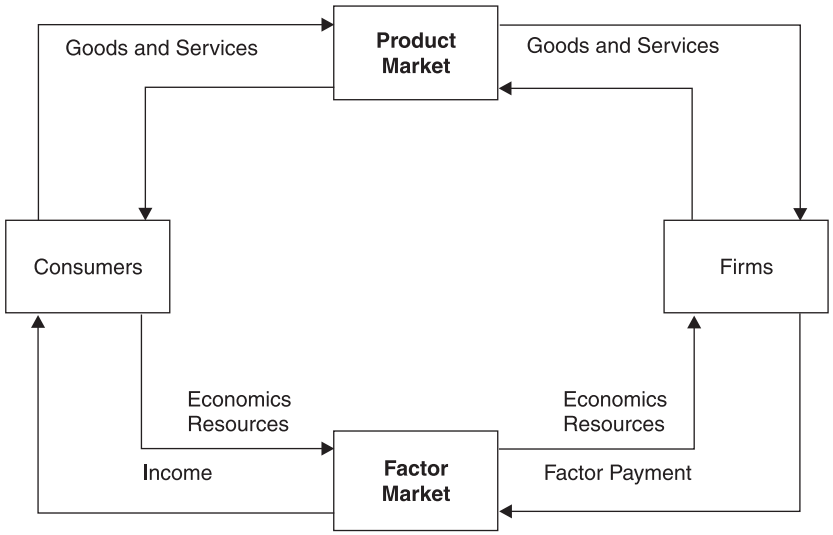

Fig. 2.1. Interrelation between consumers and firms.

Firms can also be classified on the basis of number of owners as:

(*a*) Proprietorship.

(*b*) Partnership.

(*c*) Corporations.

Some firms mentioned below are different from above. They may provide service to a group of clients for example, patients or to a group of its members only:

(*i*) Universities.

(*ii*) Public Libraries.

(*iii*) Hospitals.

(*iv*) Museums.

(*v*) Churches.

(*vi*) Voluntary Organizations.

(*vii*) Cooperatives.

(*viii*) Unions.

(*ix*) Professional Societies, etc.

The concept of a firm plays a central role in the theory and practice of managerial economics. It is, therefore, valuable to discuss the objectives of a firm.

2.2. Objectives of the Firm

Profit Maximization

Profit maximization goal of the firm has been the approach to the study of a firm in equilibrium analysis. Profit maximization means the largest absolute amount of profit over a time period, both short-term and long-term. The short-run is a period where adjustments cannot be made quickly in matters of supply and demand. Long-run however enables adjustment to changed conditions. In the short-run for instance, there are production and financial constraints in expanding the firm even though

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it would yield higher profits. But given some time most of the constraints can be overcome. Profit maximization can be viewed from the point of view of the control wielded by a firm over price and output determination. Where the firm operates under conditions of perfect competition from several firms, the price is determined in the market by supply and demand conditions.

The individual firms have to maximize their profits at this given price. They are price-taker firms. On the other hand, when there is imperfect competition, the number of sellers is small enough so that each seller has some control over its selling price. The firms in these markets are called price searchers because they must constantly search out the price that will maximize profits. The price-searcher firm is a broad term encompassing the market structures of monopoly, oligopoly and to some extent monopolistic competition.

Though profit maximization can be viewed from many different perspectives, the marginal approach helps to formulate a rule which is applicable for both price takers and price searchers. Profit can be defined as the difference between total revenue (TR) and total cost (TC).

$$\text{Profit} = \text{TR} - \text{TC}$$

The output which yields the maximum profits is the ideal to be achieved. Fig. 2.2 below illustrates this simple profit maximization rule.

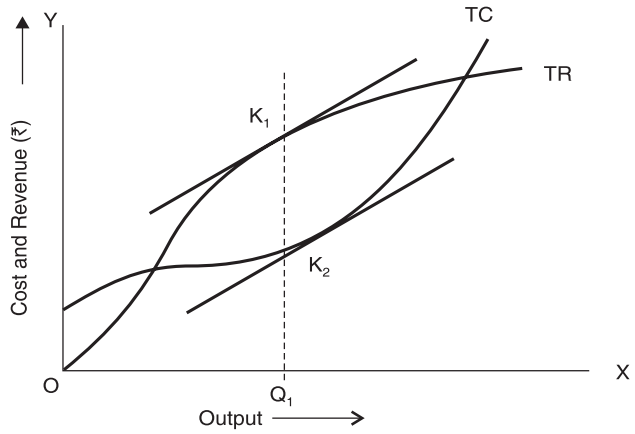

Fig. 2.2. Profit maximization of a firm (total cost and total revenue).

TC and TR represent total cost and total revenue curves respectively.

The gap between the two curves is maximum ($K_1 - K_2$) at OQ_1 output. Here the slopes of the two curves show by "tangents" are also equal i.e., marginal revenue is equal to marginal cost. Therefore, OQ_1 is the profit maximizing output.

As the firm increases its production it results in additional cost. The generalized decision making rule for propitiation can be stated as follows:

"As long as marginal revenue exceeds marginal cost, the firm should expand its output. The firm should produce that level of output which equates marginal revenue with marginal cost".

Marginal revenue is the change in revenue which comes, from selling an additional unit. Marginal cost is the change in cost which results from producing an

additional unit. The profit maximization rule in simple terms means the firm should continue production as long as the incremental cost of production is less than the increase in revenue. Profit maximization by equating marginal cost with marginal revenue is illustrated in Fig. 2.3.

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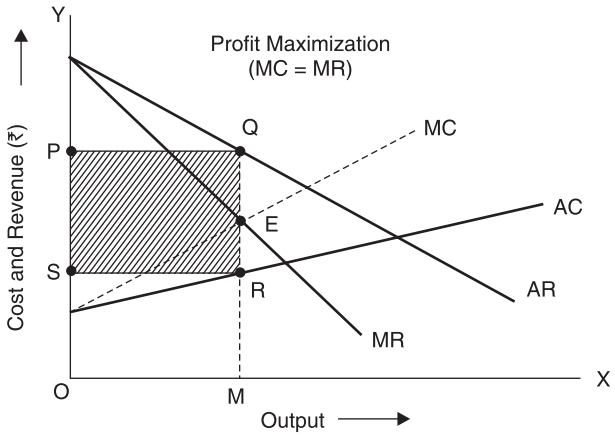

Fig. 2.3. Profit maximization in a firm: (MC = MR Rule).

Fig. 2.3 above shows the profit maximization rule applied to a firm. AC and AR are the average cost and average revenue curves respectively. MC is the marginal cost and MR is the marginal revenue. As the firm expands its output from O, there is a fall in marginal revenue and a rise in marginal cost. So long as marginal revenue is higher than marginal cost, the additional output gives profit. When the output reaches OM, marginal revenue equals marginal cost at E and gets a profit of PQRS (the shaded area). Beyond OM output, the MC curve is higher than MR curve indicating losses. The maximum profit is shown by the shaded rectangular area. Thus profits are maximum when MR = MC. (A detailed discussion of profit maximization in the short-run and long-run for the price taker firm under perfect competition and price searcher firm under imperfect competition is given in the chapter on price determination under different market structures).

There are some reasons why a firm should adopt the profit maximization goal. Firstly, in the case of owner managed firms it is only natural that they should get the adequate and maximum returns. Maximizing profits is, therefore, a rational behaviour of the firm. Secondly, profit maximization is an aspect of the survival of the firm. When there are many firms as under perfect competition, he can survive only if the firm makes profits. Under monopoly there are no rivals but he would naturally wish to pursue maximization for his efforts.

The traditional objective of the firm has been profit maximization. It is still regarded as the most common and theoretically the most plausible objective of business firms. We define profits as revenues less costs. But the definition of cost is quite different for the economist than for an accountant. Consider an independent businessperson who has an MBA degree and is considering investing ₹ 1 lakh in a retail store that she would manage. There are no other employees. The projected income statement for the year as prepared by an accountant is as shown below:

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Sales:			₹ 90,000
Less: Cost of Goods sold		₹ 40,000	
Gross Profit:			₹ 50,000
Less:	Advertising	₹ 10,000	
	Depreciation	₹ 10,000	
	Utilities	₹ 3,000	
	Property Tax	₹ 2,000	
	Misc.	₹ 5,000	= ₹ 30,000
Net Accounting Profit			= ₹ 20,000

Fig. 2.4. Projected income statement.

This accounting or business profit is what is reported in publications and in the quarterly and annual financial reports of businesses. The economist recognizes other costs, defined as implicit costs. These costs are not reflected in cash outlays by the firm, but are the costs associated with foregone opportunities. Such implicit costs are not included in the accounting statements but must be included in any rational decision-making framework. There are two major implicit costs in this example. First, the owner has invested ₹ 1 lakh in the business. Suppose the best alternative use for the money is a bank account paying a 10 per cent interest rate. This risk less investment would return ₹ 10,000 annually. Thus, ₹ 10,000 should be considered as the implicit or opportunity cost of having ₹ 1 lakh invested in the retail store.

Let us consider the second implicit cost, which includes the manager's time and talent. The annual wage return on an MBA degree may be taken as ₹ 35,000 per year. This is the implicit cost of managing this business rather than working for someone else. Thus, the income statement should be amended in the following way in order to determine the economic profit:

Looking at this broader perspective, the business is projected to lose ₹ 25,000 in the first year. ₹ 20,000 accounting profit disappears when all relevant costs are included. Another way of looking at the problem is to assume that ₹ 1 lakh had to be borrowed at, say, 10 per cent interest and an MBA graduate hired at ₹ 35,000 per year to run the store. In this case, the implicit costs become explicit and the accounting made explicit. Obviously, with the financial information reported in this way, an entirely different decision might be made on whether to start this business or not.

Sales:			₹ 90,000
Less: Cost of Goods sold		₹ 40,000	
Gross Profit:			₹ 50,000
Less Explicit Cost:			
	Advertising	₹ 10,000	
	Depreciation	₹ 10,000	
	Utilities	₹ 3,000	
	Property Tax	₹ 2,000	
	Misc.	₹ 5,000	= ₹ 30,000
Accounting Profit		₹ 20,000	
Less:Implicit Costs:			
	Return on ₹ 1 lakh of capital	₹ 10,000	
	Foeign wages	₹ 35,000	= ₹ 45,000
Net "Economic Profit"			= ₹ 25,000

Fig. 2.5. Income statement for determining economic profit.

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Thus, we can say that economic profit equals the revenue of the firm minus its explicit costs and implicit costs. To arrive at the cost incurred by a firm, a value must be put to all the inputs used by the firm. Money outlays are only a part of the costs. As stated above, economists also define opportunity cost. Since the resources are limited, and have alternative uses, you must sacrifice the production of a good or service in order to commit the resource to its present use. For example, if by being the owner manager of your firm, you sacrifice a job that offers you ₹ 2,00,000 per annum, then two lakhs is your opportunity cost of managing the firm. Similarly, if he was not playing cricket, Sachin Tendulkar, could have earned a living (perhaps, not such a good one!) by being a cricket commentator. Sachin's opportunity cost of playing cricket is the amount he could have earned being a television commentator. The assignment of monetary values to physical inputs is easy in some cases and difficult in others. All economic costing is governed by the principle of opportunity cost. If the firm maximizes profits, it must evaluate its costs according to the opportunity cost principle. Assigning costs is straightforward when the firm buys an input on a competitive market. Suppose the firm spends ₹ 20,000 on buying electricity. For its factory, it has sacrificed claims to whatever else ₹ 20,000 can buy and thus the purchase price is a reasonable measure of the opportunity cost of using that electricity. The situation is the same for hired factors of production.

However, a cost must be assigned to factors of production that the firm neither purchases, nor hires because it already owns them. The cost of using these inputs is implicit costs and has to be imputed. Implicit costs arise because the alternative (opportunity) cost doctrine must be applied to be firm. The profit calculated after including implicit as well as explicit costs in total cost is called economic profit. Profit plays two primary roles in the free-market system. First, it acts as a signal to producers to increase or decrease the rate of output, or to enter or leave an industry. Second, profit is a reward for entrepreneurial activity, including risk taking and innovation. In a competitive industry, economic profits tend to be transitory. The achievement of high profits by a firm usually results in other firms increasing their output of that product, thus reducing price and profit. Firms that have monopoly power may be able to earn above normal profits over a longer period; such profit does not play a socially useful role in the economy. Although, profit maximization is a dominant objective of the firm, other important objectives of the firm, other than profit maximization that we will discuss in this unit are:

1. Maximization of sales revenue.
2. Maximization of firm's growth rate.
3. Maximization of manager's own utility or satisfaction.
4. Making a satisfactory rate of profit.
5. Long-run survival of the firm.
6. Entry-prevention and risk avoidance.

2.3. Profit as Business Objective

Meaning of Profit

Profit means different things to different people. The word "Profit" has different

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meaning for businessmen, accountants, tax collectors, workers and economists and it is often used in a loose polemical sense that buries its real significance. In a general sense, "profit" is regarded as income accruing to the equity holders, in the same sense as wages accrue to the labour rent accrues to the owners of rentable assets; and interest accrues to the money lenders. To, a layman, profit means all income that flows to the investors. To an accountant, 'profit' means the excess of revenue over all paid out costs including both manufacturing and overhead expenses. It is more or less the same net profit. For all practical purposes, profit or business income means profit in accountancy sense plus non-allowable expenses. Economic concept of profit is of pure profit and is called economic profit or just profit. Pure profit is a return over and above opportunity cost i.e., the income which a businessman might expect from the second best alternative use of his resources.

Economic Versus Accounting Profits

When most people hear the word profit, they think of accounting profits. Accounting profits are the difference between the total amount of money taken in from sales (total revenue, or price times quantity sold) minus the dollar cost of producing goods or services. Accounting profits are what show up on the firm's income statement, and are typically reported to the manager by the firm's accounting department.

A more general way to define profits is in terms of what the economist refers to as economic profits. Economic profits are the difference between total revenue and total opportunity cost of producing the firms goods or services. The opportunity cost of using a resource includes both the explicit cost of the resource and the implicit cost of giving up the next best alternative use of the resource. The opportunity cost of producing a good or service generally is higher than accounting cost because it includes both the dollar value of the cost and any implicit costs.

Implicit costs are very hard to measure and therefore are often overlooked by managers. Effective managers, however continually seek data from other sources to identify and quantify implicit costs. Managers of large firms can use sources within the company, including the firm's finance, marketing, and/or legal departments to obtain data about the implicit costs of decisions. In other instances managers must collect data on their own. For example, what does it cost to you to read this book? The price you paid to the bookstore for this book is explicit (or accounting) cost, while the implicit cost is the value of what you are giving up by reading the book. You could be studying some other subjects or watching TV and each of these alternatives have some value to you. The "best" of these alternatives is the implicit cost of reading this book: you are giving up this alternative to read the book. Similarly, the opportunity cost of going to school is much higher than the cost of tuitions and books; it also includes the amount of money you would earn had you decided to work rather than go to school.

In the business world, the opportunity cost of opening a restaurant is the next best alternative use of the resources used to establish the restaurant—say, opening a hair styling saloon. Again these resources include not only the explicit financial resources needed to open the business but any implicit cost as well.

$$\text{Accounting profit} = TR - (W+R+I+M)$$

where W = Wages and salaries

R = Rent

I = Interest

M = Cost of materials

If an entrepreneur uses his capital in his business, he forgoes interest which he might earn by purchasing debentures of other companies or depositing his money with joint stock companies for a period. Furthermore if an entrepreneur uses his labour in his own company he foregoes his income which he might earn by working as a manager in another firm. Similarly, by using productive assets in his own business, he sacrifices his market rent. The foregone incomes—interest, salary, and rent are called opportunity cost or transfer costs. Accounting profit does not take into account the opportunity cost.

It may be noted that the economic or pure profit makes provisions also for (*a*) insurable risk, (*b*) depreciation, and (*c*) necessary payment to shareholders to prevent them from withdrawing their capital. Pure profit may thus be defined as 'a residual left after all contractual costs have been met, including the transfer costs of management, insurable risks, depreciation and payments to shareholders sufficient to maintain investment at its current level. Thus, Pure profit = Total revenue – (explicit costs + implicit costs).

Pure profit so defined may not be necessarily positive for a single firm in a single year—it may be even negative, since it may not be possible to decide beforehand the best way of using the resources. Besides, in economics, pure profit is considered to be a short-term phenomenon—it does not exist in the long-run especially under perfectly competitive conditions.

2.4. The Profit Maximization Principle

The profit maximization principle has been criticized on several grounds.

1. Divorce of Ownership from Control

The rise of corporate firm of organization has resulted in a separation of ownership and control. Ownership is vested with the shareholders and control is wielded by the managers. It has not been empirically proved that shareholders are more concerned with profitability than anything else. Profitability is not the only criterion by which shareholders appraise the performance of a company.

2. Difficulties in Pursuing Profit Maximization

The business environment is considerably more complex than what the neoclassical theorists thought of, when they propounded the profit maximization theory of the firm. 'The modern firm faces lot of uncertainties. As a result, short run profit maximizing behaviour is subordinated to the more important objective of long-run equilibrium of the firm. For example, the firm's objective to pursue 'good-will' in the long-run may clash with short-run profit objective. The structure of competition may be such that the firm may be concerned about market share and diversification of the enterprise rather than profit-maximization in the short-run.

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3. Problems in the Measurement of Profit

There are some problems about the measurement of a profit as a measure of firm's efficiency. Profit may be the result of imperfections in the market and profits may be the reward of monopolistic exploitation. Worse still, profit measurement process itself is dubious. For instance, many business firms often present the business accounts in such a way as to show good profits on a particular day by the clever manipulation of the value of its assets.

4. Social Responsibility of the Firm

The firm is now-a-days not just an economic entity concerned with production or sales alone. The firm owes a. responsibility to offer good, well-paid jobs for employees, to provide efficient services to customers. In short the firm has a social responsibility beyond profit maximization.

5. Deliberate Limitation of Profits

Firms may deliberately show lesser profits in the short-run in order to discourage labourers from asking for higher wages or to" discourage entry of new firms. Limited profits may be shown to prevent the government from taking over the business.

6. A Version for Business Expansion

Profit maximization requires business expansion and it means additional risk and responsibility. Businessmen may be satisfied with the present level of profits and may not expand.

Conclusion

There is no doubt that in a competitive world, the main measure of business efficiency is the profit made by a firm. In a very dynamic society, profitability is essential for the survival of the business. Several firms have disappeared due to inability to make profits. However, society's attitude towards profits is less indulgent. Many feel that profit is socially unacceptable and excess profits are even immoral. But this disenchantment of Western societies regarding the profit objective of the firm is in sharp contrast to the changing attitude of the communist countries which have come to accept that incentives provided by the profit motive have some role to play in the allocation of resources.

2.5. Satisfactory Level of Profits

Herbert A. Simon has presented the concept of satisfactory level of profits to be the major goal of firms as opposed to maximization of profits. In his view an entrepreneur "must expect the firm's goals to be not maximizing profits, but attaining a certain level or rate of profit, holding a certain share of the market or a certain level of sales. Firms would try to "satisfy" rather than maximize with reference to profits. However, this goal has been criticized for two reasons:

1. It is often difficult if not impossible to distinguish between satisfactory level of profits and maximum profits. Firms may be satisfied only when

they earn the maximum profits. In that case, the implications of both the theories become the same;

2. Firms which have a satisfactory level of profits may be left behind by the profit maximizing firm in their struggle for survival. This results in all firms getting involved in a mad race for maximum profits.

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2.6. Value Maximization

Most firms have sidelined short-term profit as their objective. Firms are often found to sacrifice their short-term profit for increasing the future long-term profit. Thus, the theory states that the objective of a firm is to maximize wealth or value of the firm. For example, firms undertake research and development expenditure, expenditure on new capital equipment or major marketing programmers which require expenditure initially but are meant to generate future profits. The objective of the firm is thus to maximize the present or discounted value of all future profits and can be stated as:

$$PV(\pi) = \frac{\pi_1}{(1+r)} + \frac{\pi_2}{(1+r)} + ... + \frac{\pi_u}{(1+r)^2}$$

where,

PV = Present value of all expected future profits of the firm.

$p, ..., p_n$ = Expected profit in 1, 2, ..., n years

r = Appropriate discount rate

t = Time period 1, ..., n.

Assumed profit is equal to total revenue (TR) minus total cost (TC), then the value of the firm can also be stated as:

$$\text{Value of the firm} = \sum_{t=1}^{n} \frac{\pi_t}{(1+r)^t}$$

Thus maximizing the discounted value of all future profits is equivalent to maximizing the value of the firm.

A careful inspection of the equation suggests how a firm's managers and workers can influence its value. For example, in a company, the marketing managers and sales representatives work hard to increase its total revenues, while its production managers and manufacturing engineers strive to reduce its total costs. At the same time, its financial managers play a major role in obtaining capital, and hence influence the equation, while its research and development personnel invent and reduce its total costs. All of these diverse groups affect the company's value, defined here as the present value of all expected future profits of the firm.

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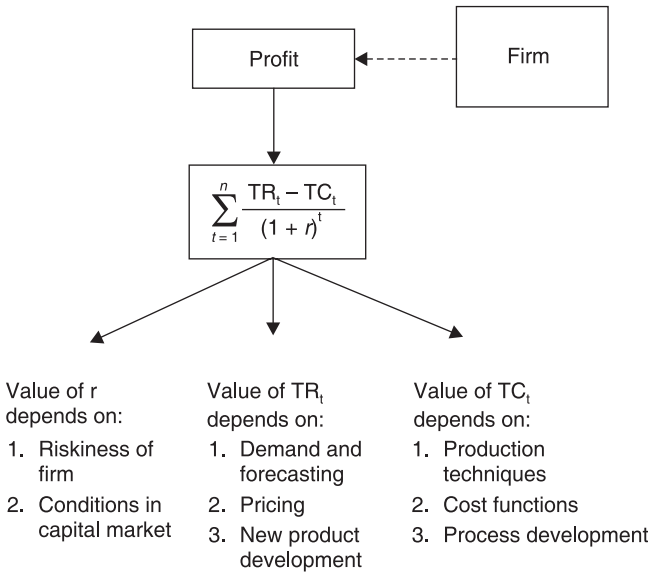

Fig. 2.6. Present value of all expected future profits.

2.7. Alternative Objectives of Firms

Economists who do not accept profit maximization as the sole objective of the firm has suggested alternative goals. These may be classified into two types:

1. Explanations where something other than profit is maximized.
   These are known as optimizing models;
2. Explanation where non-maximizing behaviour is described.
   (Non-optimizing models). Sales Revenue maximization
   Approach given by Prof. J. Baumol belongs to the first category.

Sales Maximization

Economists have also examined other objectives of firms. We shall discuss some of them here. According to Baumol, most managers will try to maximize sales revenue. There are many reasons for this. For example, the salary and other earnings of managers are more closely related to sales revenue than to profits. Banks and financers look at sales revenue while financing the corporation. The sales revenue trend is a readily available indicator of performance of the firm.

Growth in sales increases the competitive strength of the firm. However, in the long-run, sales maximization and profit maximization may converge into one objective. Another economist Robin

Marris assumes that owners and managers have different utility functions to maximize. The manager's utility function (U_m) and Owner' utility functions (U_o) are:

$$U_m = f(\text{Salary, job, power, prestige, status})$$

$$U_o = f(\text{Output, capital, profit, share})$$

By maximizing the variables, managers maximize both their own utility function and that of the owners. Most of the variables of both managers and owners are correlated with a single variable, namely, the size of the firm. Maximization of

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these variables depends on the growth rate of the firm. Thus, Marris argues that managers will attempt to maximize growth rate of firms. However, this objective does not completely discard the profit maximization objective. According to Oliver Williamson, managers seek to maximize their own utility function subject to a minimum level of profit. The utility function which managers seek to maximize include both quantifiable variables like salary and slack earnings and non-quantifiable variables like power, status, security of job, etc. The model developed by Cyert-March focuses on satisfying behavior of managers. The firm has to deal with an uncertain business world and managers have to satisfy a variety of groups—staff, shareholders, customers, suppliers, authorities, etc. All these groups often have conflicting interests in the firm. In order to reconcile between the conflicting interests and goals, managers form an aspiration level of the firm combining the following objectives—production, sales and market share, inventory and profit. The aspiration levels are modified and revised on the basis of achievements and changing business environment. As is true with most economic models, the application will depend upon the situation and one cannot say that a particular model is better than the other. In general, one can assert that the profit maximizing assumption seems to be a reasonable approximation of the real world, although in certain cases there might be a deviation from this objective.

Firms prefer maximization of sales revenue for various reasons:

1. Financial institutions evaluate the success and strength of the firm in terms of rate of growth of its sales revenue.
2. Empirical evidence shows that the stock earnings and salaries of top management are correlated more closely with sales than with profits.
3. Increasing sales revenue over a period of time gives prestige to the top management, but profits are enjoyed only by the shareholders.
4. Growing sales means higher salaries and better terms. Hence sales revenue maximization results in a healthy personal policy.
5. It is seen that managers prefer a 'steady performance with satisfactory profits' than spectacular profit maximization. Because it is difficult for managers to present spectacular profits year after year. They will be criticized if spectacular profits decline. Hence, they may prefer a safe and steady performance with satisfactory profits but good sales.
6. Large and increasing sales help the firm to obtain a bigger market share which gives it a greater competitive power.

Baumol's sales maximization model is based on the following assumptions:

(*i*) Sales maximization goal is subject to a minimum profit. Prof. Baumol does not give a clear definition of minimum profit. It may be defined as "the funds to pay some satisfactory rate of dividends, to reinvest for growth and ensure financial safety.

(*ii*) Advertisement is a major instrument of 'sales maximization i.e., advertisement will shift the demand curve to the right.

(*iii*) Advertisement costs are independent of production costs.

(*iv*) Price of the product is assumed to be constant. Sales maximization objective is explained in the following figure:

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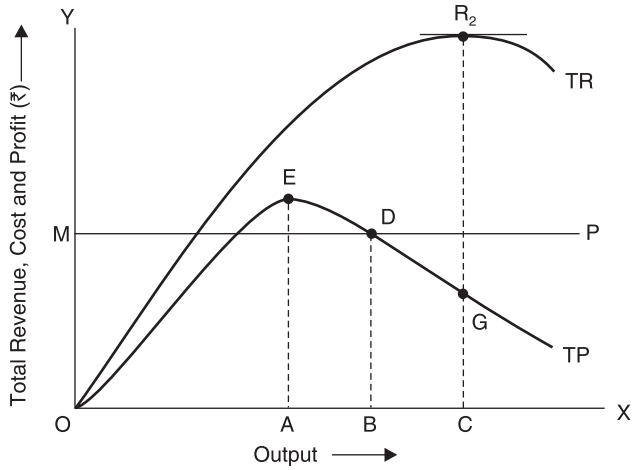

Fig. 2.7. Sales maximization.

Total Revenue, cost and profits are measured on Y axis and output on X axis. TR is the total revenue curve and TC is the total cost curve. TP shows the total profit curve which rises up to E and then starts declining. MP denotes Minimum Profit Line. If the firm's objective is to maximize profits it will produce OA output because at this level it gets the maximum profit EA. But the firm wants to achieve sales maximization. This can be done up to the point where its marginal revenue becomes zero. This is R_2 on the total revenue curve. Hence OC is the sales maximization output which is larger than the profit maximization output of OA. But the total profits are only GC which is less than EA, the maximum profits possible. But the firm operates with a constraint that it must make a minimum profit of OM. The total profits earned by the firm are equal to minimum profit goal at D. Hence sales maximization firm will produce OB output.

Baumls explanation has more implications than the traditional profit maximization principle. His theory is more consistent with observed behaviour. In the traditional theory changes in fixed costs do not influence output or prices except for fixing the break-even point. But according to Baumol a firm which experiences any increase in fixed costs will try to reduce them or pass them on to the consumer in the form of higher prices, through large sales. This theory also establishes that businessmen may consider non-price competition through sales maximization to be the more advantageous alternative.

However, Baumol's theory does not explain how the firms maximize their sales volume within a profit constraint. Further it explains business behaviour, without elaborating the mechanisms by which they try to find new alternative.

2.8. Economic Objective

Besides maximization of profits and sales, a firm may have certain other economic goals.

1. Maximum Growth Rate

This is a dynamic objective for a firm which is consistent with profit constraint i.e., a firm can attain maximum rate of growth with optimal net profits. While tracing the growth process of a firm, Kenneth E. Bounding has traced the various stages in

the life cycle of a firm. In the early stage, the main aim of a firm is to establish itself in new markets for which it may introduce new products. In the second stage, when it is well established it may focus its attention on the goal of improving internal efficiency to achieve high growth rates. Bounding points out that at a later stage "as the industry approaches maturity, the near-term potential becomes dimmed partly through saturation of demand and partly because of the very high costs of further market penetration at the expense of competition. At this point, major emphasis at the expense of competition is placed on long-term growth and flexibility". Finally in the long-run, the firm may face adverse conditions such as a falling demand for its products or rising prices for its inputs. As a result, if it incurs losses, it may continue for a short while but will eventually go out of business because the resources can find more profitable employment elsewhere.

2. Desire for Liquidity

Prof. Joel Dean considers the liquidity criterion to be more important than that of profit maximization. This refers to the desire of a firm to keep adequate amount of cash so that it can avoid a liquidity crisis. This is referred to as 'Banker Mentality' i.e., the fear of financial crisis and the fear of bankruptcy are very powerful factors in influencing the firm to keep adequate cash.

2.9. Non-economic Objectives

1. Survival

Peter F. Ducker says that survival is the main goal of any firm. This is a long-term goal. Of course profitability is required for survival. But it need not be maximum profits but reasonable profits. It can survive only if it wins the goodwill of the people by producing goods and services of good quality. A good name earned would help the firm to enjoy a bigger share of the market and this will enable it in its aspirations of survival, over a long period. This may be considered as a conservative objective by some economists. Prof. K. Rothschild and Pellner supported this objective.

2. Building up Public Confidence for the Product

This is a secondary objective to the goal of survival. The primary aim of some firms may be to build up the customer confidence for its product and services. It may also adopt vigorous advertising techniques.

3. Welfare

The business firm has to keep welfare of different groups of people as its objective. First and foremost, the welfare of the workers has to be considered. They should be provided good working conditions, fair wages and other benefits to increase their involvement in the firm. Labour welfare goal is very important as it can improve labour efficiency and productivity.

Such labour welfare schemes may include subsidized canteen, medical care, schools and housing for the workers. The business firm depends upon the patronage of the society for its survival. Hence it owes some moral responsibility towards social welfare for which it may undertake charitable works like construction of hospitals, schools, etc.

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4. Sound Business Practices

A firm may give more importance to business ethics. This will make it adopt only sound business practices like providing price lists, replacement or refund for defective products, which again will go a long way in building up the goodwill for the company.

5. Progressive Management

Progressive management is very essential for dynamic growth of the firm. Hence, as a part of this goal, the firm may implement suitable policies like worker's participation in management, workers training programmes etc.

An analysis of the different goals of the firm shows that the firms keep several goals before them, of which profit maximization may be the more important one. The short-run goals may be different from long-term objectives. Different firms prefer different objectives at different points of time. They may continue different economic and non-economic objectives within a framework of social responsibilities.

2.10. Social Responsibilities of a Business Firm

The concept of social responsibility of a business firm is of recent origin. Traditional economic theory considered the business firm as an economic entity operating with the sole criterion of profit maximization. But profits have to be earned through sales which requires good public image. To the extent the business profits emerge from the society in which it operates, the firm owes a responsibility to the society. Kenneth Andrews defines social responsibility as "the intelligent and objective concern for the welfare of society that restrains individual and corporate behaviour from ultimately destructive activities no matter how immediately profitable." In short it must result in positive contribution to human betterment. This is also known as the philanthropic theory of the firm whereby it is expected to make efforts to share its profits with the society.

Business firms are expected to have social responsibility for three reasons. Firstly, business firms are able to operate only because of the support it enjoys from the society. Therefore, they are expected to be worthy of confidence reposed by the society. Secondly, a business corporation cannot operate in a vacuum. It cannot stand alone by disrupting the stability of the society. The firms must help in the attainment of certain social goals like sponsoring hospitals and technical institutes in the interest of its long-term survival and lasting growth. Thirdly, if the business firms show a greater social responsibility, the need for governmental controls and regulations will be minimal. Thus greater the social responsibility shown by a firm, greater will be the autonomy and economic freedom it would be permitted to enjoy. Prof. Milton Friedman does not give much credit to the concept of social responsibility but Prof. Paul Samuelson advocates a spirit of social responsibility as an inherent feature of a modern business firm. Operating in an anti-social way can be subjected to social regulation.

Social responsibility of the firms may be viewed from the point of its impact on constituent elements of the social environment in which it operates viz., the employees, the consumers, the owners and the society.

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As far as the employees are concerned they should be provided with a congenial work atmosphere and fair wages. It should keep a part of its profits for workers' training programmes and education. The firm should allocate funds generously for workers' welfare programmes like maintenance of crèches for working mothers, operation of canteens, provision of recreational facilities, etc. The culmination of social responsibility towards employees takes the shape of allowing them an opportunity to participate in management. Workers' participation in management can be called an internal aspect of social responsibility. Any attempt on the part of the firm to extend social responsibility to its employees will result in an increase in workers' efficiency and productivity and it is therefore in the interest of the firm to discharge this duty.

The firm owes a social responsibility to the consumers on whose patronage its very existence depends. Thus the firms should provide goods and services of the proper and standard quality. Any lapse on its part in this respect must be corrected by replacement of the article or refunding of money as far as possible. This alone will win over the confidence of the consumers. Similarly price policy should be fair enough to give normal profits. Any prosperity the firm enjoys should be" shared with the consumers either through lowering of prices or provision of incentives and discounts. Discharge of this social responsibility is an external function which will increase its goodwill and help in sales promotion and further profits.

The firm owes a social responsibility to the owners who have been enterprising enough to invest their savings to carry on the business activity. Hence the firm should be managed well to give a fair return on capital to the owners. Only then they would have the incentive for future investment and expansion policies of the firm. While this will naturally occur in sole proprietorship or partnership, it may be overlooked in a joint stock firm where shareholders interests may not be taken into account. Firms should share their prosperity with shareholders by giving them good dividends. Similarly as reserves increase, they should be automatically given bonus shares and rights equity. This will also help to generate more capital for the firm. Thus discharge of social responsibility to the shareholders ultimately turns out to be to the advantage of the firm itself.

Finally the firm is responsible to the society at large. The firm is expected to take anti-pollution measures. It can undertake financial sponsorship for the maintenance of parks, entertainment centre, hospitals, schools, etc. Firms are even found to sponsor by providing funds for research activities in science, industry and medicine which may not be possible by individuals on account of financial constraints. Though such external activities do not directly benefit the firm, it results in better public relations and hence is good for its long-term survival policy.

In the discharge of such social responsibility function, the firm will have to deal with three types of problems. The first set of problems is those social problems which are not created by the firm. They may be like poverty, drug abuse, urban disintegration, etc., yet the firm can try to solve them in any small way it can, for instance, new firms can decide to set up their new units in undeveloped regions instead of setting up in already congested areas like Mumbai. Free medical camps to poor sections may be financially sponsored. The second set of problems are those which are caused by the routine business operations like control of pollution, safety

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measures in the industrial unit, production of safe goods, etc. The Bhopal gas tragedy is the result of gross negligence of a firm to undertake proper safety measures in maintenance. Similarly cigarette companies are required to give a statutory warning about the hazards of smoking on the covering on the packet. These are all aspects of social responsibility for problems for which the firm is responsible. The third set of problems is connected with regular economic activities within the firm; they may vary from providing equal employment opportunity to promotion, consideration for occupational health or improving the quality of life and work for its employees.

In India the Sachar Committee Report recognized that social responsibility of business must be given a serious consideration. It pointed out a few instances where private companies have shown a sense of social responsibility in problems of rural development and environmental protection or provision of basic amenities, etc. Several firms have now taken up the practice of adopting small villages in their area to provide basic amenities in health, education and housing for the poor in a phased manner. The Committee insisted that private business should give proper information to the shareholders, consumers and workers. Secrecy in corporate operations should be avoided. The Committee recommended that private enterprise in India must have public accountability as in the case of public enterprises.

The concept of social responsibility of firms is very important for poor, developing countries like India, where social problems are rampant. Yet social responsibility alone cannot be the overriding concern above economic criteria.

Milton Friedman feels that advocacy of social responsibility by firms is the green signal to pure socialism. Businessmen should discharge their duty of managing their business responsibilities and they cannot be expected to be trained for shouldering social responsibilities. Nevertheless the concept of social responsibility has emerged to be the pre-dominant non-economic objective to be pursued by firms along with other economic objectives of profit maximization.

2.11. Summary

- The firm is an organization that produces a good or service for sale and it plays a central role in theory and practice of Managerial Economics.
- The inputs or the factors of production are divisible into two broad categories—human resources and capital resources. Labour resource and entrepreneurial resource are the two human resource inputs while land, man-made capital, forests, rivers, etc., are the capital resources. Thus the four major factors of production (FOP) are land, man-made capital, labour, and entrepreneur (organization) while the remuneration they get is rent, interest (capital rental), wage, and profit, respectively. The function of the firm, thus, is to purchase resources or inputs of labour services, capital and raw materials in order to convert them into goods and services for sale.
- Profit maximization goal of the firm has been the approach to the study of a firm in equilibrium analysis.
- Growth in sales increases the competitive strength of the firm. However, in the long-run, sales maximization and profit maximization may converge into one objective.
- A firm can attain maximum rate of growth with optimal net profits.

- Peter F. Ducker says that survival is the main goal of any firm. This is a long-term goal. Of course profitability is required for survival. But it need not be maximum profits but reasonable profits. It can survive only if it wins the goodwill of the people by producing goods and services of good quality.
- As far as the employees are concerned they should be provided with a congenial work atmosphere and fair wages.
- The firm owes a social responsibility to the consumers on whose patronage its very existence depends. Thus the firms should provide goods and services of the proper and standard quality.
- The firm owes a social responsibility to the owners who have been enterprising enough to invest their savings to carry on the business activity. Hence the firm should be managed well to give a fair return on capital to the owners. Only then they would have the incentive for future investment and expansion policies of the firm.

2.12. Review Questions

1. What do you mean by a firm? Discuss objectives of the firm.
2. Discuss different grounds on white profit maximization principle has been criticized.
3. Discuss the alternative goals suggested by the economists who do not accept profit maximization as the sole objective of the firm.
4. Discuss the social responsibilities of a business firm.
5. Write short notes on
   (*a*) Profit as business objective
   (*b*) Value maximization

Unit–3

Demand Analysis

Notes

Structure

3.1. Introduction
3.2. Demand
3.3. Price Demand Relationship
3.4. Law of Demand
3.5. Why Demand Curve Slopes Downward?
3.6. Movement Along the Demand Curve
3.7. Shift in the Demand Curve
3.8. Price Elasticity of Demand (PED)
3.9. Summary
3.10. Review Questions

3.1. Introduction

Under capitalism, price mechanism solves the central problems of the economy. Further, price of any commodity or economic service is determined by the interaction of demand and supply. It is important to understand precisely what demand and supply are, as they play an important role in the determination of price of a commodity.

The modern theory of demand rests on the structure built by Alfred Marshall (1842-1924). He taught at Cambridge University and through his book '*Principles of Economics',* influenced the thinking of the British and American economists.

3.2. Demand

Goods are demanded, because they have utility. These goods are demanded by everyone, who thinks that it is useful in satisfying his want. Alcohol, though actually harms a person, is demanded by one whose want it satisfies. But, every want of a consumer cannot be expressed as a demand in the economic sense of the term. Demand does not mean mere desire for a commodity. A beggar may desire to have a car, but his desire is not going to affect its market price as he is not having the necessary purchasing power to buy a car. Such a desire, which is not backed by the necessary purchasing power to fulfil it, will remain a desire and will never become the demand. To become a demand, a desire, (*i*) must be backed by the ability or the capacity to pay for the good, and (*ii*) the willingness on the part of the consumer to spend for the good. A demand is, thus, an effective desire.

Demand is always defined with reference to price and a time period. It is meaningless to specify demand without reference to price and time period. The

statement that demand for apples is 2000 kg is meaningless. The price at which these apples are demanded is to be mentioned, as with the change in price, the quantity demanded may also change. Demand is also expressed with reference to time. Even at the same price, demand may change, depending upon the time period under consideration. Thus, at ₹ 10 per kg demand for apples may be different at different times during a particular period. Demand for goods may be defined as the, "quantity of a commodity that will be bought at a particular price and during a given period or point of time."

3.3. Price Demand Relationship

Demand for a commodity during a given period of time depends on many factors including the price of the commodity. Demand schedules and demand curves are the techniques to describe the pricedemand relationship. Both the demand schedules and demand curves can be for an individual or for a market as a whole.

The demand of an individual consumer for a commodity is called individual demand. An individual demand schedule is a tabular statement of prices and quantities showing how much an individual consumer will buy of a commodity at each of the given prices. It does not say anything about what the price is. It is a list of the various quantities that the individual consumer will buy at different prices. While preparing an individual demand schedule, it is assumed that other factors like prices of the related goods, income of the consumer, etc., do not change. A hypothetical demand schedule of a consumer, showing the quantities of apples demanded at different prices is shown in Table 3.1.

Table 3.1. Demand schedule for apples.

Price of Apples (per kg)	Quantities of Apples Demanded by the Consumer (in kg)
12	1
11	2
10	3
9	4
8	5

We can see from the table that when the price of apples is ₹12 per kg, only one kg of apples is demanded. When the price comes down to 8 per kg, the consumer buys 5 kg of it. Hence, we see an inverse relationship between the price and the quantity demanded. This inverse relationship between the price and quantity demanded of a commodity is known as the 'law of demand', which is explained later in the chapter.

Individual Demand Curve

The combinations of the prices and the quantities for an individual consumer is shown in the demand schedule. When plotted on a graph, it becomes the individual demand curve. This is a graphical representation of the combinations of the prices and the quantities of the commodity under consideration. While economists do use

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arithmetical demand schedule, the demand schedule for a commodity is more usually shown graphically by drawing the demand curve for the commodity in question.

Various market prices are measured along the vertical axis. Quantities demanded of the commodity are measured along the horizontal axis. Now, the demand schedule of the table is plotted as a series of points. The information presented in this figure is exactly the same as in the table. But, the form of presentation is different. Now, we have it in the form of a curve.

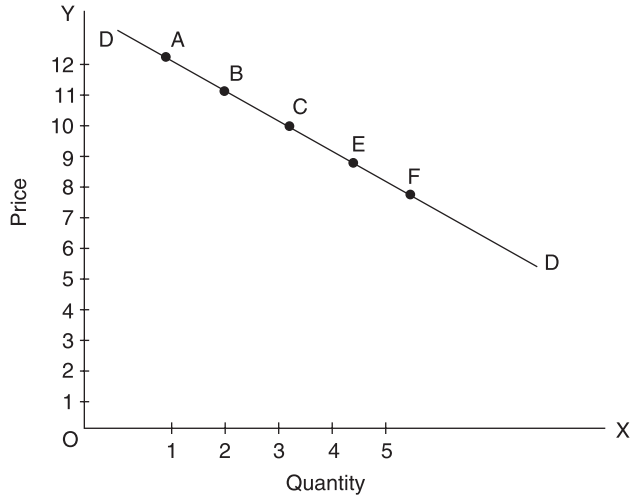

Fig. 3.1. Individual demand curve.

At point 'A' the consumer is buying 1 kg of apples, when the price of apples is ₹ 12 per kg. Point 'B' represents the purchase of 2 kg of apples at the reduced price of ₹ 11 per kg. Similarly, 'C', 'E' and 'F' represent other combinations of prices and quantities. By joining these points, we have a smooth curve DD, called the demand curve for apples. It shows the quantities of apples that the consumer would buy at each of the prices. The demand curve shows the relation between the price of the commodity and the quantity demanded. That is why, it is also called price quantity curve. Given price, corresponding quantity demanded can be read out from the curve and vice versa. The demand curve is downward sloping indicating that with the fall in price, quantity demanded increases. It is drawn on the assumption that other factors influencing demand, viz., prices of related goods, incomes and tastes of consumers, etc. remain unchanged.

Market Demand Schedule and Market Demand Curve

So far we have considered the case of a single consumer buying goods. But, in the market, there are a large number of consumers. Market demand means the demand of all the consumers in the market for goods at a particular price. Market demand schedule shows the total demand of all the consumers in the market at various prices. It can be constructed by the summation of the individual demand schedules of all the individuals in the market. Let us take the case of two individuals in the market. The analysis can be extended to any number of buyers. The individual demand schedules of both the individual buyers, 'A' and 'B' and the market demand schedule is shown in the figure. Market demand has been found out by adding the individual demands of 'A' and 'B' at corresponding prices.

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Table 8.2. The market demand at each price.

P	Q_A	Q_B	Q_{A+B}
12	1	2	3
11	2	3	5
10	3	4	7
9	4	5	9
8	5	6	11

In the table Q_A is the demand of 'A', Q_B is the demand of 'B' and Q_{A+B} represents the combined demand of 'A' and 'B' (or the market demand) at each price.

At the price of ₹ 12 per kg 'A' demands 1 kg of apples and 'B' demands 2 kg of apples. The total demand at ₹ 12 per kg is 3 kg. At price of ₹ 11 per kg 'A' demands 2 kg of apples and 'B' demands 3 kg of apples. The total demand at this price is 5 kg of apples, which is also the market demand for apples at that price on the assumption that there are only two buyers in the market. Similarly, the total demand of apples at every other price can be found out.

The same relation between price and quantity that has been shown with numbers displayed geometrically in Fig. 3.2. The market demand schedule has now been transformed into a market demand curve. The market demand curve has been found by the horizontal summation of individual demand curves of A and B. Note again that the market demand curve is downward sloping, showing the inverse relationship between price and quantity demanded. Some people who bought some of the commodity before its price fell may buy more now, because it is cheaper. Further, when price of a commodity falls, new buyers will enter the market and will further raise the demand of the commodity. This is another reason for downward slope of the market demand curve.

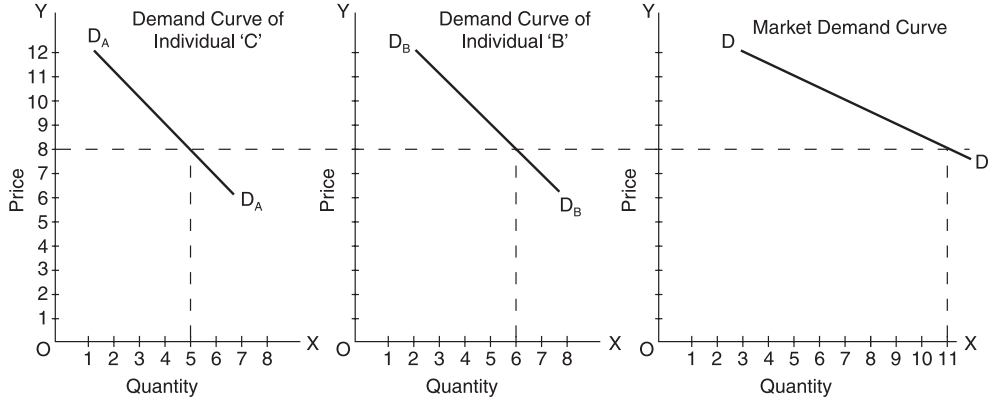

Fig. 3.2. Derivation of the market demand curve.

Demand Function

A function explains the relationship between two or more variables. If two or more variables are related in such a way that for each set of values of some variables (called the independent variable) there corresponds a value of some other variables (the dependent variable), then the dependent variable is called the function of the

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independent variable. In economics, a number of functions such as demand function, production function, cost function, etc., are discussed. Thus, the word 'function' refers to the factors on which demand, production or cost depends.

The demand function for a good is the relation between the various amounts of the commodity that might be bought and the determinants of those amounts in a given market and in a given period of time. As stated earlier, to constitute demand, desire must be backed by the necessary purchasing power to purchase the commodity. While the desire to purchase is revealed by tastes and preferences, income reveals the capability to purchase. Further, since a household spends this income to purchase a number of commodities, demand for a particular commodity depends upon its price and the prices of other commodities. Thus, the factors on which demand for a commodity depends (determinants of demand) are: (1) the price of the commodity, (2) the prices of related goods (substitutes or compliments), (3) the income of the consumers, (4) the tastes and preferences of the consumers, and (5) the expectations about the future prices of the commodity.

The demand function may be expressed symbolically as $Q = f(P, Pr, Y, T, E)$

where 'Q' stands for the quantity demanded of the commodity, 'P' for the price of the commodity, 'Pr' for prices of the related goods, 'Y' for income of the consumer, 'T' for tastes and preferences of the consumer and 'E' for the expectations about the future prices. Now, we explain, how demand for the commodity is affected by each of these determinants.

1. **Price of the Commodity:** Price of the commodity is the most important determinant of demand. Generally, it is expected that with the fall in the price, the quantity demanded of the commodity increases and with the increase in the price, the quantity demanded of the commodity decreases. Thus, there is an inverse relationship between the price of a commodity and its quantity demanded. The inverse relationship between price and quantity demanded of a commodity is commonly known as the 'law of demand'. The relation between price and quantity demanded of a commodity is also called the *price demand* or simply demand.
2. Prices of the Related Goods: The demand for a commodity also depends upon the prices of the goods related to it. In economics, two types of relations between goods are discussed. These are complimentarily and substitutability of goods. How the prices of the related goods affect the price of the commodity under consideration depends upon whether the related goods are complimentary or substitutes. If the two goods are used together to satisfy a given want, they are said to be *complimentary goods*, such as tea and sugar, ball pen and refill, car and petrol, etc. when two or more goods are simultaneously required to satisfy a want, their demand is called as *joint demand*. A fall in the price of a commodity raises the demand for its complimentary goods. For example, with the fall in the price of petrol, demand for car will go up. This happens because, with the fall in the price of petrol, its demand increases. Increased quantity of petrol can be used with more cars. Similar is the relation between the price of tea and demand for sugar. A fall in the price of tea causes increase in the demand for sugar. On the other hand, those goods which can be used in place of

one another are called substitutes. For example, tea and coffee, scooter and motor cycle, etc. Existence of alterative goods (substitutes) to satisfy a given demand divides the total demand among different goods. The larger the number of substitutes, the smaller will be demand for anyone of them. Further, the level of prices of different goods influences the demand for their substitutes. A fall in the price of goods results in the decrease in the demand for its substitutes and an increase in the price of goods results in the increase in the demand for its substitutes. With the increase in the price of coffee, demand for tea increases because people start using more of tea and less of coffee. In other words, tea is substituted for coffee. On the contrary, with the decrease in the price of coffee, demand for tea will come down. Thus, we can see a direct relation between the price of goods and demand for its substitute.

The relation between the price of one commodity and demand for another commodity is called the cross demand. Fig. 3.3(a) shows the cross demand curve that shows the relation between the price of petrol and the demand for car (complimentary goods). It has a negative slope. With the decrease in the price of petrol from OP_1 to OP_2, demand for car has gone up from OQ_1, to OQ_2 Fig. 3.3(b) shows the cross demand curve for tea and coffee (substitute goods). It is upward sloping, showing the direct relation between the price of coffee and demand for tea. With the increase in the price of coffee from OP_1 to OP_2, the demand for tea has gone up from OQ_1 to OQ_2 this is so because with the increase in the price of coffee people start substituting tea for coffee.

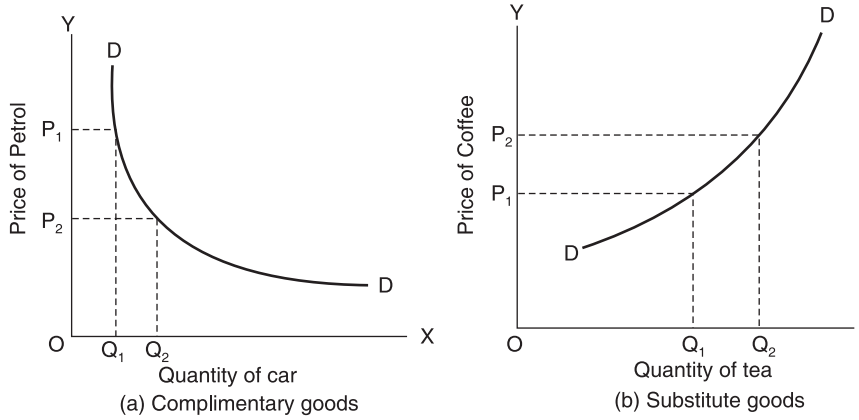

Fig. 3.3. Complimentary and substitute goods.

3. **Income of the Consumer:** The demand for goods also depends upon income of the consumer. With the increase in the income, his purchasing power increases and he is in a position to afford more goods. Consequently, their demand for goods increases. Thus, increase in income has a positive effect on the demand for goods. The relation between income and demand is called *income demand*. Generally income of the people is directly related to their demand. So, the income demand curve is upward sloping [Fig. 3.4(a)]. Such goods are called *normal goods* for which income effect is positive, i.e., when income goes up, demand for such goods also goes

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up and when income falls, demand also falls. However, for certain goods called necessities; demand is not related to income either way. Here, an example of salt may be given. The demand for salt does not increase with the increase in income and it does not decrease with the decrease in income. Thus, the curve showing the relation between the income of the consumer and the demand for salt is vertical. Such a curve is shown in Fig. 3.4(b). It is also possible that a rise in income of the consumer may lead to a fall in the quantity demanded of goods. This is the case with inferior goods. These goods are said to be inferior goods, if its demand falls with the increase in the income of the consumer. Thus, there is an inverse relationship between income and demand of inferior goods, i.e., income effect is negative. Examples of inferior goods are vegetable ghee, gur, coarse grain such as bajra, etc. Fig. 3.4(c) illustrates the income demand curve for inferior goods.

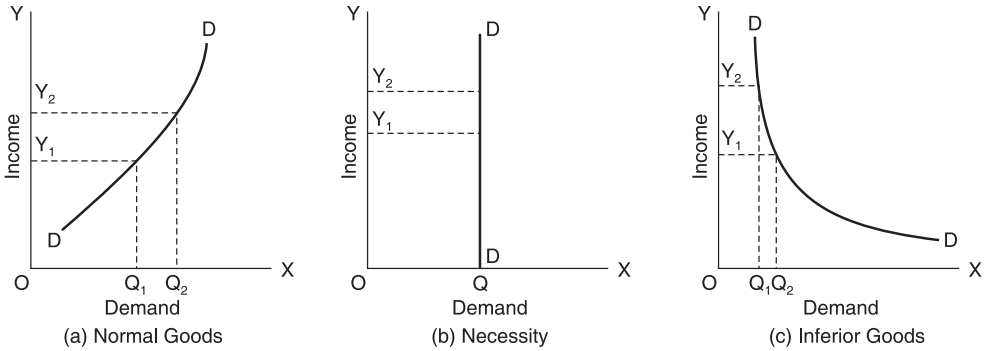

Fig. 3.4. Income vs. demand for goods.

Sometimes it may even happen that quantity demanded of a commodity increases initially. But after a certain level of income, quantity demanded remains the same or even falls.

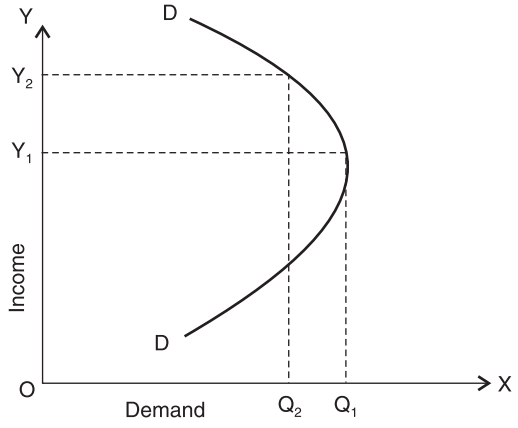

Fig. 3.5. The income demand curve.

Demand is influenced not only by changes in current income, but also by accumulated income of the preceding periods (wealth). If marginal propensity to consume by the consumer is high (i.e. low marginal propensity to save), a large portion of additional income earned will be used to buy goods and little will be saved and vice versa. Thus, change in

propensity to consume (or save) brings about a change in the demand for goods.

4. **Tastes and Preferences of the Consumer:** Another important factor which affects the level of demand of a commodity in the market is the tastes and preferences of the consumer: Tastes and preferences often change, which affect the level of demand for various goods. The demand for goods are more, which is liked by consumers and for which they have a preference. Consumer's tastes and preferences may change because of a change in the fashion or as a result of the advertisement for various products. It is advertisement that to a large extent has affected the demand for Babul tooth paste. Many a times, films are responsible for the creation of fashion, which affect the demand of the various existing products. Sometimes, consumers become habitual or accustomed to the use of certain goods and they may not change the use of such goods, unless sufficient impetus is applied. Consumer preferences are also molded by changes in customs, conventions and habits. On the contrary, when some goods have gone out of fashion or people's tastes and preferences no longer remain favourable to them, the demand for them falls.
5. **Expectations about Future Prices:** Consumers expectations about the future prices of the goods also affect their demand. If for some reason, consumers expect prices of certain goods to rise in the near future, they tend to demand more of it in the present. Consequently, demand for these goods whose prices are expected to rise goes up. On the other hand, if they expect the prices to fall in the near future, they will demand less of it in the present. Further, if consumers hope that in the future they will have good income, then they will increase their purchases in the present. The present demand for goods will rise as a result.
6. **Other Factors:** Educational background, social status, marital status, age, place of residence (urban or rural) are some of the sociological factors, which affect consumer demand. Changes in climate and weather conditions also influence a consumer's demand. Advertisement, sales promotion measures, availability of credit also affects a consumer's demand. The market demand for goods are obtained by adding up the individual demands at various prices. It is influenced by three additional factors. These are:
   - (*a*) **Size of the Population:** The greater is the number of consumers of goods, the greater the market demand for it, thus, the demand for a commodity is directly related with the population which is determined by birth and death rates. Population is also affected by migration and immigration.
   - (*b*) **Composition of Population:** If there are more children, demand for baby food, toys, biscuits, sweets, etc. will be large. Similarly, if there are more old people, spectacles, artificial teeth, tonics, and fruits etc. will be more in demand. Predominance of young people in the population will raise the demand for cosmetics, sport goods, jeans etc.

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Similarly, sex composition also affects the demand for a number of commodities.

(*c*) Distribution of Income: If income is equally distributed among the different sections of the society, all of them will be in a position to demand. But, there will be more demand for goods purchased by relatively poorer people, like wheat, rice, fans, etc. But, if the income is unevenly distributed, then majority of the people will get small portion of the national income, the demand for commodity will be limited. Most of the demand in this case will come from rich people. Further, in this case, relatively greater portion of the income will be saved (by rich people).

3.4. Law of Demand

Law of demand is one of the best known and the most important laws of economic theory. It explains the general tendency of the consumers to buy more goods at a lower price and less of it at a higher price. Lower price attracts consumers to buy more. Besides, some consumers who were not buying the goods at a higher price can also afford to buy it at a lower price. Consequently, with the fall in the price of the goods, demand for it generally increases. Thus, the law of demand expresses the inverse relationship between the price and the quantity demanded of a commodity, other things being equal. In other words, when the price of goods rises, demand falls and when the price falls, demand rises, provided factors other than the price remain unchanged. The law is based on the assumption that the other determinants of demand, viz. income of the consumer, tastes and preferences of the consumer, prices of the related goods, future expectations, size and composition of population, distribution of income, etc. do not change during the operation of the law. If they do change, the law may fail to operate. For example, if with the fall in the price of the goods, a consumer develops disliking for it or his income declines, he may not buy more of it.

The law of demand indicates only the direction of the change of demand corresponding to a change in price. It does not say anything about the magnitude of change in the quantity demanded. For example, if price of apples comes down from ₹ 12 per kg to ₹ 10 per kg, the law tells us that demand for apples will increase. But, it does not tell the amount by which the demand for apples will increase as a result of a fall in price. There is no mathematical relationship between price and demand of a commodity.

The law of demand has been defined by various economists differently. Some of the definitions are as under:

"The greater the amount to be sold, the smaller must be the price at which it is offered in order that it may find purchasers or in other words, if other things remain the same, the amount demanded increases with a fall in price and diminishes with a rise in price." **Marshall**

"A fall in the price of a commodity causes the household to buy more of that commodity and less of the other commodities which compete with it, while rise in

prices causes the household to buy less of this commodity and more of competing commodities". **Lipsey**

"When the price of the goods are raised (at the same time that all other things are held constant) less of it is demanded. Or, what is the same thing: if a greater quantity of goods are put on the market, then, other things being equal, it can be sold at a lower price." **Samuelson**

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All the definitions exhibit one thing—that there exists a negative association between prices and quantities demanded. The qualifying clause 'other things remaining the same' implies the assumptions underlying this law.

The law of demand can be illustrated through a demand curve. In Fig. 3.6 price is measured along the Y-axis and quantity is measured along the X-axis. DD is the demand curve of the goods under consideration. At the price OP_1 the quantity demanded is OQ_1. If the price of the goods falls to OP_2 the quantity demanded increases to OQ_2. The demand curve is downward sloping, which is in accordance with the law of demand. It should be remembered that while drawing the demand curve, all the determinants of demand (except price of the goods in question) are assumed to remain constant. Only the relationship between price and quantity demanded of the commodity is described. The effect of a change in other determinants of demand is discussed later in this chapter.

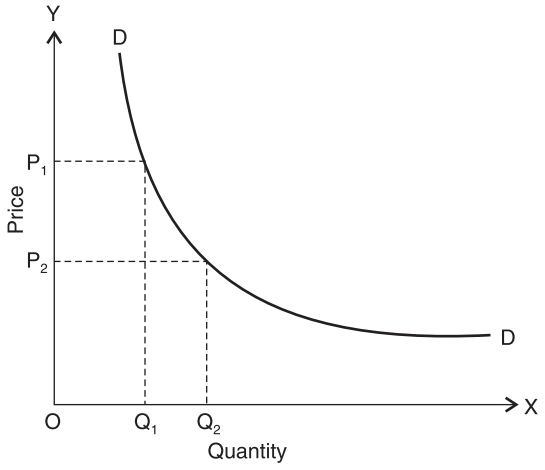

Fig. 3.6. The demand curve.

The functional relationship between demand and prices can be expressed as $Qx = f(Px)$ where Qx is demand and Px is the own price of goods 'X'.

The above expression shows that price is the cause variable and demand is effect variable.

Alternatively, price is the independent variable while demand is dependent variable. In technical terms, independent variable (here, price) is also called *exogenous variable*, while dependent variable (here, demand) is called *endogenous variable*.

When the demand curve for the goods are a straight line, the corresponding demand function will have a linear equation of the form:

$$Q\,x = a - b\,P\,x$$

Here, '*a*' is the quantity intercept and 'b' is the slope. DQx/DPx express the

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rate at which quantity demanded changes, with change in the price. Negative sign in the equation shows inverse price-demand relationship. For plotting the demand curve, we normally use the inverse demand curve $P\,x = \alpha - \beta\ Q\,x$. here, $\alpha = a/b$ is the price intercept and $\beta = 1/b$ is the slope of inverse demand curve and equals DPx/DQx. This inverse form of the demand curve indicates that for each given quantity demanded, the maximum price a consumer (or consumers) would be willing to pay rather than doing without that quantity. The normal form of the demand curve can also be similarly defined.

3.5. Why Demand Curve Slopes Downward?

Law of demand states the inverse relationship between price of a commodity and its quantity demanded, other things remaining the same. The demand of a commodity is more at a lower price and less at a higher price. That is why, the demand curve slopes downward. But, a question arises as to why more quantity is demanded at a lower price and less quantity is demanded at a higher price. The factors responsible for the downward slope of the demand curve are.

1. The Law of Diminishing Marginal Utility

The law of diminishing marginal utility states that as the consumption of a commodity by a consumer increases, the satisfaction obtained by the consumer from each additional unit (i.e., marginal utility) of the commodity goes on diminishing. Thus, a thirsty man gets too much satisfaction by drinking a glass of water. But, the second glass of water will not be as much satisfying to him, as the first glass of water. The satisfaction derived from the third glass will even be lesser. The price that a consumer is willing to pay for a commodity is directly related to the satisfaction that he derives from that commodity. As we have seen, the consumer gets more satisfaction from the initial units of a commodity. He is ready to pay a high price for it. Further, the satisfaction that he gets from the successive units diminishes; he will purchase additional units of the commodity only at a lower price. Thus, more quantity is bought at a lower price and less quantity is bought at a higher price.

2. Income Effect

A fall in the price of a commodity increases the purchasing power (or the real income) of the consumer. In other words, the consumer has to spend less to buy the same quantity of the commodity as before. The money so saved because of a fall in the price of the commodity can be spent by the consumer in any way he likes. He will spend a part of this money on buying some more units of the same commodity, whose price has fallen. Thus, a fall in the price of this commodity increases its demand. This is called income effect. Same explanation can be given for a rise in price. In this case, demand for the commodity under consideration will increase due to fall in purchasing power of the consumer.

3. Substitution Effect

This is another important reason for increase in demand as a result of a fall in the price of the commodity and vice versa. When the price of a commodity falls, it becomes relatively cheaper than other commodities, whose prices have not fallen. So, the consumer substitutes this commodity for other commodities, which are now

relatively dearer. This is known as substitution effect. 'Because of this substitution effect, demand for the commodity in question rises. In most of the cases, substitution effect is stronger than the income effect. Marshall explained the downward slope of the demand curve with the help of substitution effect, ignoring the income effect. Later on, income effect was also considered by Hicks and Allen (under the indifference curve analysis) to explain the downward slope of the demand curve. The sum of income effect and substitution effect is called price effect. The demand curve slopes downward, as a fall in price of a commodity causes more of it to be demanded and *vice versa*.

4. Changes in the Number of Consumers

Many people cannot afford to buy a commodity at a high price. When the price of the commodity falls, a number of persons who could not afford it at a higher price can purchase it at the reduced price. This increases the number of consumers of the commodity. Thus, at a lower price, the quantity demanded of the commodity increases because of the increase in the number of consumers of the commodity and *vice versa*.

5. Diverse Uses of a Commodity

Many commodities can be put to several uses. A commodity having several uses in said to have a composite demand. For example, electricity can be used for lighting, cooking, heating, cooling and so on. At a higher price, electricity may not be used for all of these purposes, i.e., the use of electricity may be restricted to lighting only. But, if price of electricity falls, people may afford to use it for other purposes also. Thus, the demand of electricity at a lower price will increase. All the factors discussed above are responsible for the downward slope of the demand curve. In other words, these factors explain the operation of the law of demand. The importance of these factors, depends upon the circumstances of the case.

Exceptions to the Law of Demand

Law of demand expressing the inverse relationship between price and quantity demanded of a commodity is generally valid in most of the situations. But, there are some situations under which there may be direct relationship between price and quantity demanded of a commodity. These are known as exceptions to the law of demand. One of the exceptions is associated with name of Torstein Veblen (1857–1929). He was a social critic and propounded the doctrine of conspicuous consumption. According to him, if consumers measure the desirability of the utility of a commodity solely by its price and nothing else, then they tend to buy more of the commodity at a higher price and less of it at a lower price. Thus, the relationship between price and quantity demanded of the commodity becomes direct, leading to an exception to the law of demand. Diamonds are often cited as an example. Commodities like diamond, precious stones, rare paintings, etc. have a status or prestige value (rather than intrinsic value) for the rich section of the society. In this type of situation, prestige is directly associated with the price of the good. Higher the price of the good, greater will be the status or prestige of the buyer in the society and vice versa. That is why, rich people buy more of it at a higher price and less of it at a lower price. Therefore, the law of demand does not apply in case of commodities which are used as status symbols.

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Another exception to the law of demand is associated with the name of Robert Giffen (1837–1910). Early in the nineteenth century, he observed rise in the demand for bread by low paid British workers with the increase in its price. Bread was the staple food for the British workers. When the price of bread rose, they were compelled to spend more on the same quantity of bread. With little income left with them, they could not afford to buy as much meat as before. To maintain their total intake of food, they substituted bread (still being a cheaper food) for meat even at a higher price of it. Thus, a direct relationship is established between price and quantity. After the name of Robert Giffen, these goods for which there is a direct price-demand relationship are called Giffen goods. Such basic food items (like potato, bajra, barley, gram, etc.) consumed by poor families are some other examples of Giffen goods. In the case of Giffen goods, demand curve slopes upward and the law of demand does not operate.

The law of demand does not hold in times of emergency like flood, drought, famine or war, as households do not behave in normal way in such periods. Fear of shortage of goods in future in such periods increases their present demand, although the prices are rising. Further, an ignorant buyer may buy more of a commodity when its price in fact goes up. He may also be haunted by the phobia that higher priced commodity is better in quality and *vice versa*.

There are some other exceptions to the law of demand, which are only apparent and not real. One of these is related to the people's expectations about future prices. If people expect the price of a goods to rise in the future, they demand more of it even at a higher price. And if they expect the price to fall in the future, they demand less of it even at a lower price. Thus, more quantity of the goods are demanded at rising prices and less quantity of goods are demanded at falling prices. This seems contrary to the law of demand. But in this case the law of demand still holds. The change in demand for the goods are not due to the change in the prices, but, because of a shift in the demand curve, to the right or left as the case may be. Moreover, the law of demand assumes future expectations.

Similarly, over the course of a business cycle, it is found that during a period of prosperity larger amounts of goods are purchased at higher prices and during depression periods of a business cycle, smaller quantities are purchased at lower prices. If properly interpreted, this is also not an exception to the law of demand. This only shows that demand for many goods increases during prosperity because of increase in the income of people and not because of increase in prices of goods. Similarly, during the depression period, demand for goods decreases because of the decline in the income of the people and not because of the decrease in the prices of goods. Thus, it does not contradict law of demand.

Another apparent exception to the law of demand is found when a commodity is sold under different brand names at different prices. Almost identical 'Lux' and 'Supreme Lux' are sold at different prices. Higher priced 'Supreme Lux' is sold more than the lower priced 'Lux', even though both are almost identical. But, this is also not a real exception to the law of demand. This is so because those who buy higher priced brand think that the two brands are different. Hence, two brands should be analyzed as different commodities.

Notwithstanding these exceptions, the universal applicability of the law of demand is undoubted. Even the demand for Giffen goods have to be considered from the existence point of view. Bread is bare necessity for existence. The wage earners purchase the same or more amount of bread despite the price rise as it is cheap and people are habituated to consume it. Further, the demand for luxurious goods are considered from the social point of view and not from economic consideration.

Notes

3.6. Movement Along the Demand Curve

We have studied under the law of demand that other things remaining the same, if price of a commodity rises, its demand decreases and if price of the commodity falls, its demand increases. When quantity demanded of a commodity increases as a result of the fall in the price, it is called extension (or expansion) in demand (a movement down the demand curve) and when the quantity demanded decreases as a result of an increase in the price of the commodity, it is called contraction in demand (a movement up the demand curve). Thus, extension and contraction in demand imply change in quantity demanded due to change in the price of the commodity, other things remaining the same.

Extension in demand is shown in Fig. 3.7. At price $OP_1 \cdot OQ_1$, quantity of the commodity is demanded. If the price falls to OP_2, quantity demanded of the commodity increases to OQ_2. Q_1Q_2 is the extension in demand, which results from a fall in the price of the commodity from OP_1 to OP_2.

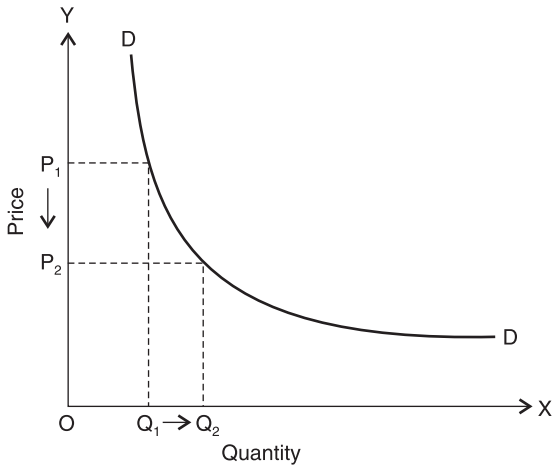

Fig. 3.7. Extension in demand.

Contraction in demand is shown in Fig. 3.8 at price OP_2. The quantity demanded of the commodity is QQ_1. When the price of the commodity rises to OP_1. The demand of the commodity falls to QQ_2, Q_1Q_2 is the contraction in demand resulting from an increase in the price from OP_2 to OP_1.

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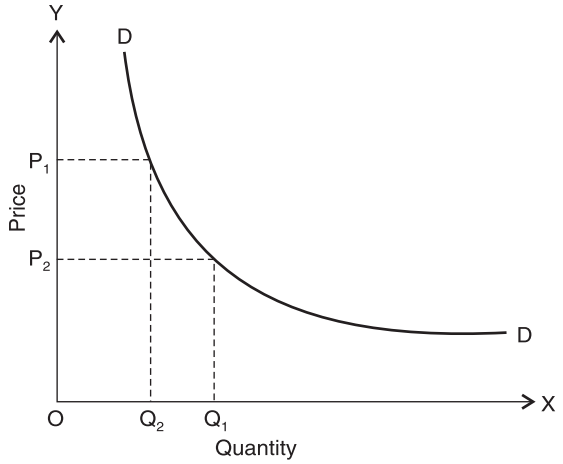

Fig. 3.8. Contraction in demand.

Both extension and contraction in demand are represented by a movement (moving down and up respectively) along the same demand curve. In these cases, there is no shift in the demand curve.

3.7. Shift in the Demand Curve

The factors or determinants of demand other than price of goods are assumed to be constant for the period for which the demand curve is prepared. As long as these factors remain unchanged, the demand curve constructed on the basis of these assumptions hold good, i.e., at lower prices, larger quantities will be demanded. Whenever these factors change, a new demand curve will come into existence, either at a lower level or a higher level, depending upon whether these factors have changed for the better or worse.

When demand of goods changes due to the change in the determinants of demand other than price of goods in question, it is called change (increase or decrease) in demand, as the case may be. The direction of change in quantity demanded depends on the nature of change. Increase in demand means that even at the same price more quantity is demanded (or same quantity is demanded at a higher price). This may be due to the increase in the income of the people, increase in the population, and increase in the prices of the substitutes of the good in question, a fall in the prices of complimentary goods, expectations of rise in price in future, redistribution of income toward groups who favour the commodity, favourable change in taste and preferences of the consumers for the commodity in the question. The increase in demand is shown in Fig. 3.9. DD is the initial demand curve. At price OP, OQ quantity is demanded. Due to the changes in the determinants of demand other than price, the demand curve shifts to the right. D′D′ is the new demand curve, now, at the same price OP, the quantity demanded is OQ_1'. Thus, the demand has increased from OQ to OQ_1, QQ_1 is the increase in demand.

Notes

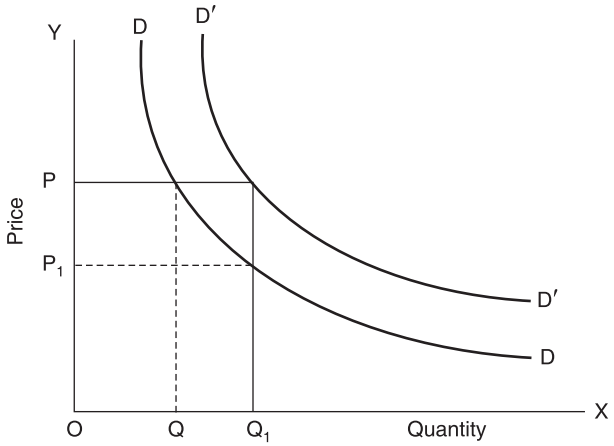

Fig. 3.9. Increase in demand.

Similarly, there is decrease in demand, when the demand curve shifts to the left. Decrease in demand means that even at the same price, small quantity is demanded or the same old amount is demanded due to the decrease in the income of the people, decrease in the population, decrease in the prices of substitute goods, increase in the prices of complementary goods, expectations of fall in price in future, redistribution of income away from groups who favour the commodity or a decline in the tastes and preferences of the consumers for the commodity. The decrease in the demand is shown in Fig. 3.10. DD is the initial demand curve. At price OP, OQ quantity is demanded. Due to the changes in the determinants of demand other than price, the demand curve shifts to the left. D′D′ is the new demand curve. Now, at the same price OP, the quantity demanded is OQ. The quantity demanded has decreased from QQ to QQ_1. QQ_1 is the decrease in demand. It can also be shown that in case of decrease in demand, same quantity may be demanded, but at a lower price. Thus, in Fig. 3.10 after a shift to the left in the demand curve, the same old quantity OQ may be demanded at a lower price OP_1.

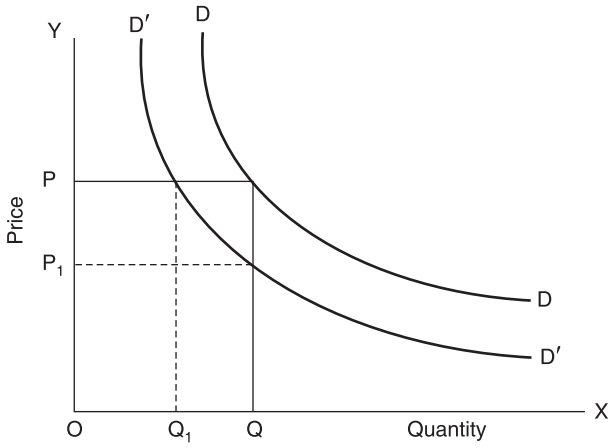

Fig. 3.10. Decrease in demand.

The causes of change in demand (upward or downward) shift in demand can be summarized as follows:

Notes

Table 8.3. Increase vs. decrease in demand.

Increase in demand (Upward or shift towards right in demand)		Decrease in demand (Downward or shift towards left in demand)	
(*i*)	Increase in income and wealth of the people.	(*i*)	Decrease in income or wealth of the people.
(*ii*)	Increase in the population.	(*ii*)	Decrease in the population.
(*iii*)	Increase in the prices of substitute goods.	(*iii*)	Decrease in the prices of substitute goods.
(*vi*)	Decrease in the prices of complementary goods.	(*iv*)	Increase in the prices of complementary goods.
(*v*)	Expectations of rise in prices in future.	(*v*)	Expectations of fall in prices in future.
(*vi*)	Changes in tastes, preferences, fashions, customs, habits, etc., in favour of a commodity.	(*vi*)	Changes in tastes, preferences, fashions, customes, habits, etc., against a commodity.

To sum up, a change in quantity demanded (extension or contraction) implies a movement along the demand curve, while a change in demand (increase or decrease) means a shift in the demand curve. Movement along a demand curve is different from the movement of the curve. A movement along a demand curve indicates that a different quantity will be demanded because the price has changed. If we move along a demand curve to the right (when the price of the commodity falls), it is a case of extension in demand. If the movement is to the left of the given point on the demand curve (when the price of the commodity rises), we get contraction of demand. On the other hand, when the demand curve moves to the right, it is called increase in demand, since at each possible price, more is demanded. Similarly, a movement of the demand curve to the left implies that there is decrease in demand. Increase or decrease (change) in demand takes place due to change in factors other than the price of the commodity in question.

3.8. Price Elasticity of Demand (PED)

Ped measures the responsiveness of demand for a product following a change in its own price. The formula for calculating the co-efficient of elasticity of demand is:

Percentage change in quantity demanded divided by the percentage change in price.

Since changes in price and quantity nearly always move in opposite directions, economists usually do not bother to put in the minus sign. We are concerned with the co-efficient of elasticity of demand. Price elasticity of demand describes the effect of a given percentage change in price (P) on the percentage change in quantities(Q) that would be purchased. The simplest formula for price elasticity (E) is

$$E = \frac{\frac{Q_2 - Q_1}{Q_2 + Q_1}}{\frac{P_2 - O_1}{P_2 + P_1}}$$

where Q_1 and Q_2 are quantities that would be taken before and after a price change, and P_1 and P_2 are the corresponding prices. If E is less than 1.0, total revenue ($P \times Q$) decreases if price is decreased, and the demand is said to be inelastic; if total revenue increases price decreases (E is greater than 1.0), the demand is said to be elastic. In other words, price elasticity indicates the responsiveness of a change in quantity to change in price.

Elasticity of demand is an important concept in the determination of price policies. However, the measurement of elasticity is difficult in actual practice. The difficulty arises from the fact that elasticity is a concept relating to a given point of time, and price elasticity describes the effect of price on quantity, assuming all other determinants to be constant. Two statistical approaches attempt to estimate the nature of the demand curve: (*i*) study of time series of prices and quantities; and (*ii*) controlled experiments. However, even if a manager does not want to go to the trouble of using these methods, the concept is valuable as an aid to his judgement. The nature of demand curve, faced by a manager, obviously is important in pricing decisions. Some authorities argue that it might be best to concentrate on demand as the most important factor in pricing.

$$E_D = \frac{\text{Relative Change in Quantity Demanded}}{\text{Relative Change in Price}} = \frac{\dfrac{\Delta \text{ Quantity}}{\text{Average Quantity}}}{\dfrac{\Delta \text{ Price}}{\text{Average Price}}}$$

$$= \frac{\dfrac{Q_2 - Q_1}{(Q_1 + Q_2)/2}}{\dfrac{P_2 - P_1}{(P_1 + P_2)/2}}$$

Table 8.4. Demand schedule.

Price	2	3	4	5	6	7	8	9
Quantity	9	8	7	6	5	4	3	2
Total Revenue	18	24	28	30	30	28	24	1

P goes from 4 to 5 and Q from 7 to 6	P goes from 5 to 6 and Q from 6 to 5	P goes from 6 to 7 and Q from 5 to 4
$\dfrac{\dfrac{6-7}{(7+6)/2}}{\dfrac{5-2}{(4+5)/2}} = \dfrac{\dfrac{1}{6.5}}{\dfrac{1}{4.5}}$	$\dfrac{\dfrac{5-6}{(6+5)/2}}{\dfrac{6-5}{(5+6)/2}} = \dfrac{\dfrac{1}{5.5}}{\dfrac{1}{5.5}}$	$\dfrac{\dfrac{4-5}{(5+4)/2}}{\dfrac{7-6}{(6+7)/2}} = \dfrac{\dfrac{1}{4.5}}{\dfrac{1}{6.5}}$
$= \dfrac{4.5}{6.5} = .69$	$= \dfrac{5.5}{5.5} = 1$	$= \dfrac{6.5}{4.5} = 1.44$

A downward sloping demand curve yields a negative E_D. Its sign is often ignored.

Notes

Table 8.5. Interpreting elasticity of demand.

Relative change in Quantity	Terminology	E_D Parameters
None, will pay anything, numerator is zero	Perfectly Inelastic	$E_D = 0$
Small	Inelastic	$0 < E_D < 1$
Q demanded and P change same percentage	Unitary Elasticity	$E_D = 1$
Large	Elastic	$1 < E_D < \infty$
Infinitely, large, price doesn't change, denominator is zero	Perfectly Elastic	E_D is undefined, can't divide by zero.

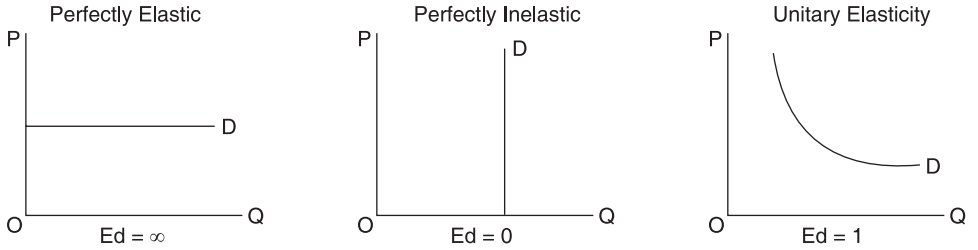

Fig. 3.11. Elasticity of demand at the extremes.

Total Revenue along a Linear Demand Curve

(*a*) Moving from left to right on the bottom graph indicates what happens to revenue as price is lowered and the quantity sold increases.

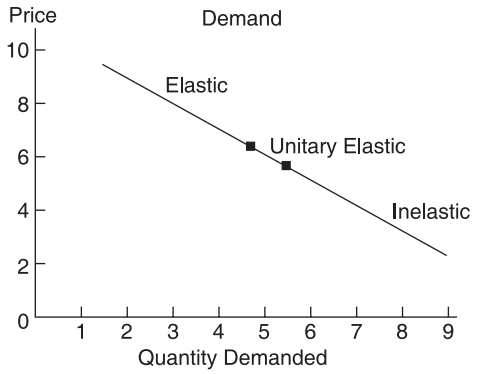

Fig. 3.12. Price vs. quantity demanded.

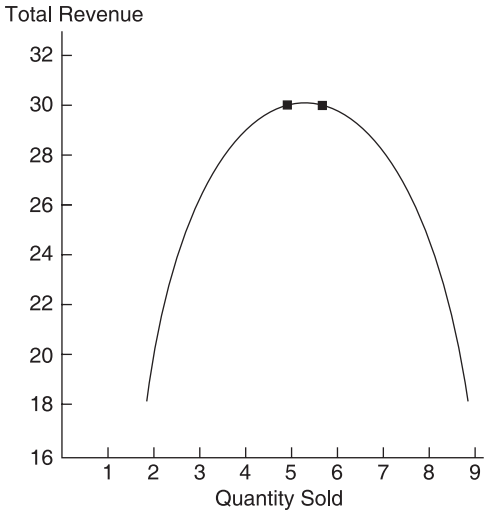

Fig. 3.13. Quantity sold vs. total revenue.

(*b*) At lower quantities (higher prices) demand is elastic. Quantity increases are relatively greater than price decreases and total revenue increases as more units are sold.

Notes

(*c*) This means a company facing an elastic demand can increase revenue by decreasing price. An important question to be answered concerns what happens to costs when a lower price causes more units to be sold.

(*d*) When demand becomes inelastic, quantity increases are relatively less than price decreases and total revenue falls.

(*e*) This means a company could increase total revenue by increasing price and selling fewer units. This could mean a very high profit. Important questions to be answered concern how competitors react to these higher prices, can the company produce lower quantities at reasonably low costs, exactly how much profit will the company make, and how will the government reach to these higher profits.

(*f*) The total revenue test

1. When demand is elastic, price and total revenue move in the opposite direction.
2. When demand is inelastic, price and total revenue move in the same direction.

Table 8.6. Elasticity of demand and total revenue.

		When Price Increases	Total Revenue
$E_D > 1$	Somewhat Elastic	Quantity changing a lot so you could lose lots of money.	decreases
$E_D = 1$	Unitary Elasticity	Quantity/Price changing by same %	no change
ED < 1	Somewhat Inelastic	Quantity doesn't change much, so you could make lots of money	increases

We need to understand cost production to understand making a profit.

Table 8.7. Elastic vs. inelastic demand.

Product Characteristics	Elastic Demand	Inelastic Demand
Number of substitutes	Many	Few or none
% of purchaser's budget	High	Low
Type of good	Luxury	Necessity, Emergency
Time until purchase	No hurry	Required quickly
Examples	Steak, Vacations	Salt, Bread

Understanding Values for Price Elasticity of Demand

Notes

- If Ped = 0 then demand is said to be perfectly inelastic. This means that demand does not change at all when the price changes—the demand curve will be vertical.
- If Ped is between 0 and 1 (i.e., the percentage change in demand from A to B is smaller than the percentage change in price), then demand is inelastic. Producers know that the change in demand will be proportionately smaller than the percentage change in price.
- If Ped = 1 (i.e., the percentage change in demand is exactly the same as the percentage change in price), then demand is said to be elastic. A 15% rise in price would lead to a 15% contraction in demand leaving total spending by the same at each price level.
- If Ped > 1, then demand responds more than proportionately to a change in price i.e., demand is elastic. For example, a 20% increase in the price of goods might lead to a 30% drop in demand. The price elasticity of demand for this price change is 1.5.

What Determines Price Elasticity of Demand?

- **The number of close substitutes for a goods/uniqueness of the product—** the more close substitutes in the market, the more elastic is the demand for a product because consumers can more easily switch their demand if the price of one product changes relative to others in the market. The huge range of package holiday tours and destinations make this a highly competitive market in terms of pricing—many holiday makers are price sensitive.
- **The cost of switching between different products—**there may be significant transaction costs involved in switching between different goods and services. In this case, demand tends to be relatively inelastic. For example, mobile phone service providers may include penalty clauses in contracts or insists on 12-month contracts being taken out.
- **The degree of necessity or whether the goods are luxury—**goods and services deemed by consumers to be necessities tend to have an inelastic demand whereas luxuries will tend to have a more elastic demand because consumers can make do without luxuries when their budgets are stretched, i.e., in an economic recession we can cut back on discretionary items of spending.
- **The % of a consumer's income allocated to spending on the goods—** goods and services that take up a high proportion of a household's income will tend to have a more elastic demand than products where large price changes makes little or no difference to someone's ability to purchase the product.
- **The time period allowed following a price change—**demand tends to be more price elastic, the longer that we allow consumers to respond to a price change by varying their purchasing decisions. In the short-run, the demand may be inelastic, because it takes time for consumers both to notice and then to respond to price fluctuations.

Notes

- **Whether the goods are subject to habitual consumption—**when this occurs, the consumer becomes much less sensitive to the price of the goods in question. Examples such as cigarettes and alcohol and other drugs come into this category.
- **Peak and off-peak demand—**demand tends to be price inelastic at peak times—a feature that suppliers can take advantage of when setting higher prices. Demand is more elastic at off-peak times, leading to lower prices for consumers. Consider for example the charges made by car rental firms during the course of a week, or the cheaper deals available at hotels at weekends and away from the high-season. Train fares are also higher on Fridays (a peak day for travelling between cities) and also at peak times during the day.
- **The breadth of definition of goods or services—**if goods are broadly defined, i.e., the demand for petrol or meat, demand is often fairly, inelastic. But specific brands of petrol or beef are likely to be more elastic following a price change.

Wi-Fi Prices and Price Elasticity of Demand

From airports to hotels to conference centres to inter-city rail services to sports stadiums and libraries, more and more people are demanding wireless internet connections for personal and business use. But demand is being constrained by the limited availability of services and, in places, high user charges. However, the price of connecting to the internet through wi-fi services is set to fall as competition in the sector heats up. Nearly 90% of laptops now come with wi-fi connections as standard and many public areas are being equipped with hotspots, but users often complain about the high price of accessing the internet. At present airports and hotels can charge high prices because in many cases a wi-fi service provider has exclusively on the area. However, the supply of wi-fi services is more competitive on the high street and prices are falling rapidly as restaurants and coffee shops are using low-priced wi-fi access as a means of attracting customers. The more wi-fi providers there are in the market-place, the higher is the price elasticity of demand for wi-fi connections.

Wireless usage is growing across the UK with sales of 3G cards growing by 475%; these are mostly through business channels. In the consumer market, sales of wi-fi routers for the home have grown by 77%. Many broadband providers are now providing free wireless routers with each new broadband subscription.

Demand Curves with Different Price Elasticity of Demand

Elasticity of demand measures the responsiveness of demand to changes in price.

Where the % change in demand is greater than % change in price–demand is elastic.

Where the % change in demand is less than % change in price–demand is inelastic.

Notes

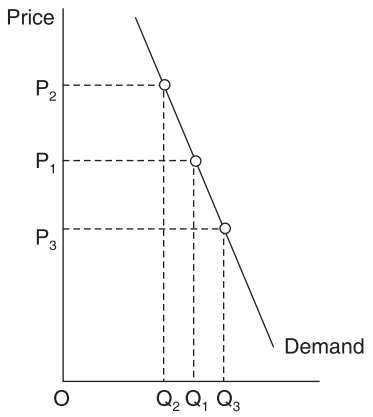

Fig. 3.14. Relatively inelastic demand.

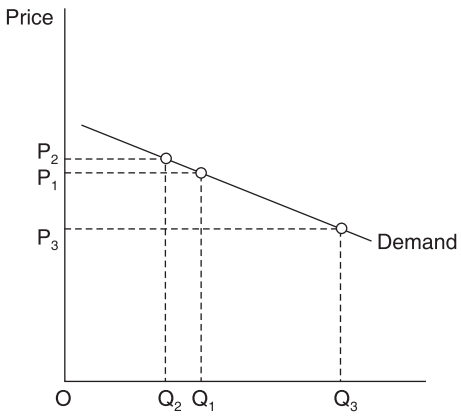

Fig. 3.15. Relatively elastic demand.

Elasticity of Demand and total Revenue for a Producer

The relationship between price elasticity of demand and a firm's total revenue is a very important one. The following figures show demand curves with different price elasticity and the effect of a change in the market price.

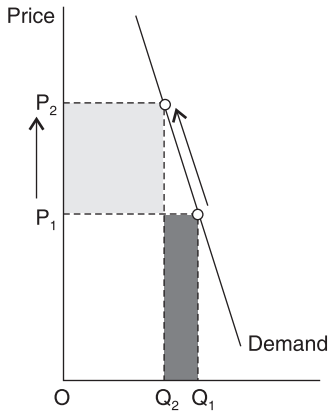

Fig. 3.16. Inelastic demand.

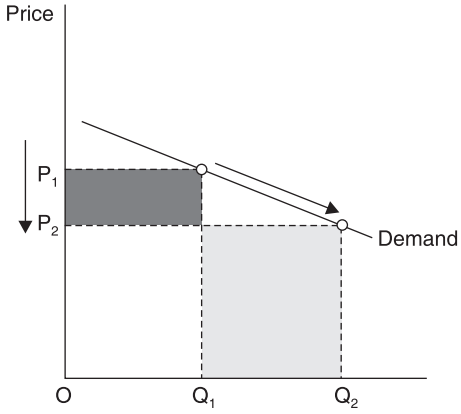

Fig. 3.17. Elastic demand.

When demand is inelastic—a rise in price leads to a rise in total revenue—for example, a 20% rise in price might cause demand to contract by only 5% (Ped = – 0.25)

When demand is elastic—a fall in price leads to a rise in total revenue—for example, a 10% fall in price might cause demand to expand by only 25% (Ped = + 2.5)

The following table gives a simple example of the relationships between market prices; quantity demanded and total revenue for a supplier. As price falls, the total revenue initially increases, in our example the maximum revenue occurs at a price of £12 per unit when 520 units are sold giving total revenue of £ 6240.

Table 8.8. Relationships between market-prices, quantity demanded and total revenue.

Price £ per unit	Quantity Units	Total Revenue £s	Marginal Revenue £s
20	200	4000	
18	280	5040	13
16	360	5760	9
14	440	6160	5
12	520	6240	1
10	600	6000	– 3
8	680	5440	– 7
6	760	4560	– 11

Notes

Consider the price elasticity of demand of a price change from £20 per unit to £18 per unit. The % change in demand is 40% following a 10% change in price—giving an elasticity of demand of – 4 (i.e., highly elastic). In this situation when demand is price elastic, a fall in price leads to higher total consumer spending/producer revenue.

Consider a price change further down the estimated demand curve—from £10 per unit to £8 per unit. The % change in demand = 13.3% following a 20% fall in price—giving a co-efficient of elasticity of – 0.665 (i.e., inelastic). A fall in price when demand is price inelastic leads to a reduction in total revenue.

Table 8.9. Change in the market vs. total revenue.

Change in the Market	What Happens to Total Revenue?
Ped is inelastic and a firm raises its price	Total revenue increases
Ped is elastic and a firm lowers its price	Total revenue increases
Ped is elastic and a firm raises its price	Total revenue decreases
Ped is – 1.5 and the firm raises price by 4%	Total revenue decreases
Ped is – 0.4 and the firm raises price by 30%	Total revenue increases
Ped is – 0.2 and the firm lowers price by 20%	Total revenue decreases
Ped is – 4.0 and the firm lowers price by 15%	Total revenue increases

Elasticity of Demand and indirect Taxation

Many products are subject to indirect taxation imposed by the government. Good examples include the excise duty on cigarettes (cigarette taxes in the UK are among the highest in Europe), alcohol and fuels. Here we consider the effects of indirect taxes on a producer's costs and the importance of price elasticity of demand in determining the effects of a tax on market price and quantity.

Notes

Most of the taxes are paid by producer

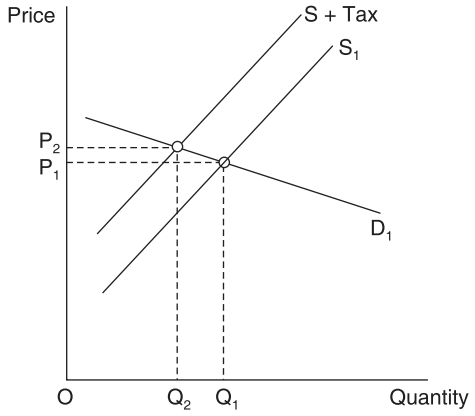

Fig. 3.18. A tax when demand is price elastic.

Most of the taxes are paid by the consumer

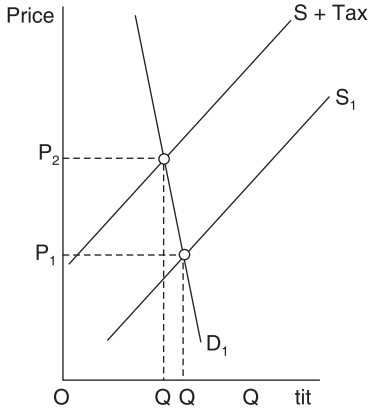

Fig. 3.19. A tax when demand is price inelastic.

A tax increases the costs of a business causing an inward shift in the supply curve. The vertical distance between the pre-tax and the post-tax supply curve shows the tax per unit. With an indirect tax, the supplier may be able to pass on some or all of this tax onto the consumer through a higher price. This is known as **shifting the burden of the tax** and the ability of businesses to do this depends on the price elasticity of demand and supply.

Consider Figs. 3.18 and 3.19 in Fig. 3.18, the demand curve is drawn as price elastic. The producer must absorb the majority of the tax itself (i.e., accept a lower profit margin on each unit sold). When demand is elastic, the effect of a tax is still to raise the price—but we see a bigger fall in equilibrium quantity.

Output has fallen from Q_1 to Q_2 due to a contraction in demand. In Fig. 3.19, demand is drawn as price inelastic (i.e., Ped < 1 over most of the range of this demand curve) and therefore the producer is able to pass on most of the tax to the consumer through a higher price without losing too much in the way of sales. The price rises from P_1 to P_2—but a large rise in price leads only to a small contraction in demand from Q_1 to Q_2.

The Usefulness of Price Elasticity for Producers

Firms can use price elasticity of demand (Ped) estimates to predict:

- The effect of a change in price on the total revenue and expenditure on a product.
- The likely **price volatility** in a market following unexpected changes in supply—this is important for commodity producers who may suffer big price movements from time to time.
- The effect of a **change in a government indirect tax** on price and quantity demanded and also whether the business is able to pass on some or all of the tax onto the consumer.
- Information on the price elasticity of demand can be used by a business as part of a policy of price discrimination (also known as yield management). This is where a monopoly supplier decides to charge different prices for the

same product to different segments of the market e.g., peak and off peak rail travel or yield management by many of our domestic and international airlines.

Income Elasticity of Demand

Notes

Income elasticity of demand is the % change in quantity demanded divided by the % change in income.

$$\varepsilon_d = \frac{\text{\% change in quantity demanded}}{\text{\% change in real income}}$$

- Income elasticity is positive for **normal (superior) goods** such as steak and vacations—more is purchased as income increases.
- Income elasticity is negative for **inferior goods** such as bread and hamburger—less is purchased as income increases.
- In times of recession, income elasticity determines loss in revenue by producing firms.

How sensitive is the demand for a product to a change in the real income of consumers? We use income elasticity of demand to measure this. The results are important since the values of income elasticity tell us something about the **nature of a product** and how it is perceived by consumers. It also affects the extent to which changes in economic growth affect the level and pattern of demand for goods and services.

Normal Goods: Normal goods have a positive income elasticity of demand so as consumers' income rises, more is demanded at each price level i.e., there is an outward shift of the demand curve.

- Normal necessities have an income elasticity of demand of between 0 and + 1, for example, if income increases by 10% and the demand for fresh fruit increases by 4% then the income elasticity is + 0.4. Demand is rising less than proportionately to income.
- Luxuries have an income elasticity of demand > + 1 i.e., the demand rises more than proportionately to a change in income—for example a 8% increase in income might lead to a 16% rise in the demand for restaurant meals. The income elasticity of demand in this example is + 2.0. Demand is highly sensitive to (increases or decreases in) income.

Inferior Goods: Inferior goods have a negative income elasticity of demand. Demand falls as income rises. Typically inferior goods or services tend to be products where there are superior goods available if the consumer has the money to be able to buy it. Examples include the demand for cigarettes, low-priced label foods in supermarkets and the demand for council-owned properties.

The income elasticity of demand is usually strongly positive for fine wines and spirits, high quality chocolates (e.g., Lindt) and luxury holidays overseas, consumer durables, audio visual equipment, 3G mobile phones and designer kitchen, sports and leisure facilities (including gym membership and sports clubs).

In contrast, income elasticity of demand is lower for staple food products such as bread, vegetables and frozen foods, mass transport (bus and rail), beer and takeaway pizza. Income elasticity of demand is negative (inferior) for cigarettes and urban bus services.

Notes

Product Ranges: However, the income elasticity of demand varies within a product range. For example, the Ped for own-label foods in supermarkets is probably less for the high-value "finest" food ranges that most major supermarkets now offer. You would also expect income elasticity of demand to vary across the vast range of vehicles for sale in the car industry and also in the holiday industry.

Long-term Changes: There is a general downward trend in the income elasticity of demand for many products, particularly foodstuffs. One reason for this is that as a society becomes richer, there are changes in consumer perceptions about different goods and services together with changes in consumer tastes and preferences. What might have been considered a luxury goods several years ago might now be regarded as a necessity (with a lower income elasticity of demand).

Consider the market for foreign travel. A few decades ago, long-distance foreign travel was regarded as a luxury. Now as real price levels have come down and incomes have grown, so millions of consumers are able to fly overseas on short and longer breaks. For many an annual holiday overseas has become a necessity and not a discretionary item of spending!

How do Businesses Make use of Estimates of Income Elasticity of Demand?

Knowledge of income elasticity of demand for different products helps firms predict the effect of a business cycle on sales. All countries experience a business cycle where actually GDP moves up and down in a regular pattern causing booms and slowdowns or perhaps a recession. The business cycle means income rise and fall.

Luxury products with high income elasticity see greater sales volatility over the business cycle than necessities where demand from consumers is less sensitive to changes in the economic cycle.

Income Elasticity and the Pattern on Consumer Demand

Over time we expect to see our real incomes rise. And as we become better off, we can afford to increase our spending on different goods and services. Clearly what is happens to the relative prices of these products will play a key role in shaping our consumption decisions. But the income elasticity of demand will also affect the pattern of demand over time. For **normal luxury goods**, whose income elasticity of demand exceeds + 1, as incomes rise, the proportion of a consumer's income spend on that product will go up. For normal necessities (income elasticity of demand is positive but less than 1) and for inferior goods (where the income elasticity of demand is negative)—as income rises, the share or proportion of their budget on these products will fall.

Cross Price Elasticity of Demand

Very often, a change in the price of one product leads to a change in the demand for another, economists call this the cross-price effect and this is the focus of this chapter. Cross price elasticity (CPed) measures the responsiveness of demand for good X following a change in the price of good Y (a related goods). We are mainly concerned here with the effect that changes in relative prices within a market have on

the pattern of demand. With cross price elasticity we make an important distinction between substitute products and complimentary goods and services.

Substitutes: With substitute goods such as brands of cereal or washing powder, an increase in the price of one goods will lead to an increase in demand for the rival product. Cross price elasticity for two substitutes will be positive.

Notes

Compliments: With goods that are in complimentary demand, such as the demand for DVD players and DVD videos, when there is a fall in the price of DVD players we expect to see more DVD players bought, leading to an expansion in market demand for DVD videos. The cross price elasticity of demand for two compliments is negative. The stronger the relationship between two products, the higher is the co-efficient of cross-price elasticity of demand. For example, with two close substitutes, the cross-price elasticity will be strongly positive. Likewise when there is a strong complimentary relationship between two products, the cross-price elasticity will be highly negative. Unrelated products have a zero cross elasticity.

How can Businesses Make use of the Concept of Cross Price Elasticity of Demand?

Pricing strategies for substitutes: If a competitor reduces the price of a rival product, firms use estimates of cross-price elasticity to predict the effect on the quantity demanded and total revenue of their own product. For example, two or more airlines competing with each other on a given route will have to consider how one airline might react to its competitor's price change. Will many consumers switch? Will they have the capacity to meet an expected rise in demand? Will the other firm match a price rise? Will it follow a price fall?

Consider for example the cross-price effect that has occurred with the rapid expansion of low-cost airlines in the European airline industry. This has been a major challenge to the existing and well-established national air carriers, many of whom have made adjustments to their business model and pricing strategies to cope with the increased competition.

Pricing strategies for complimentary goods: Popcorn, soft drinks and cinema tickets have a high negative value for cross elasticity—they are strong compliments. Popcorn has a high mark up i.e., popcorn costs pennies to make but sells for more than a pound. If firms have a reliable estimate for Cped they can estimate the effect, say, of a two-for-one cinema ticket offer on the demand for popcorn. The additional profit from extra popcorn sales may more than compensate for the lower cost of entry into the cinema.

Advertising and marketing: In highly competitive markets where brand names carry substantial value, many businesses spend huge amounts of money every year on persuasive advertising and marketing. There are many aims behind this, including attempting to shift out the demand curve for a product (or product range) and also build consumer loyalty to a brand. When consumers become habitual purchasers of a product, the cross-price elasticity of demand against rival products will decrease. This reduces the size of the substitution effect following a price change and makes demand less sensitive to price. The result is that firms may be able to charge a higher price, increase their total revenue and turn consumer surplus into higher profit.

For goods which are compliments, Cped will have negative sign and for goods which are substitutes, cross elasticity will have a positive sign.

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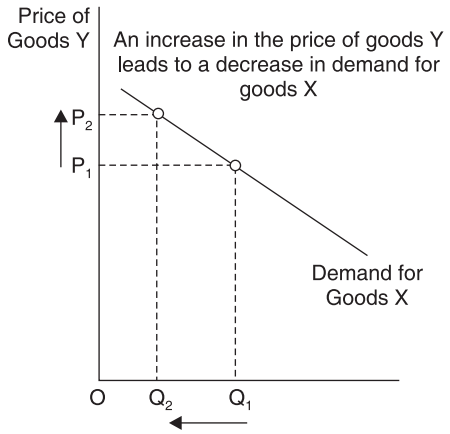

Fig. 3.20. Relationship between two close compliments.

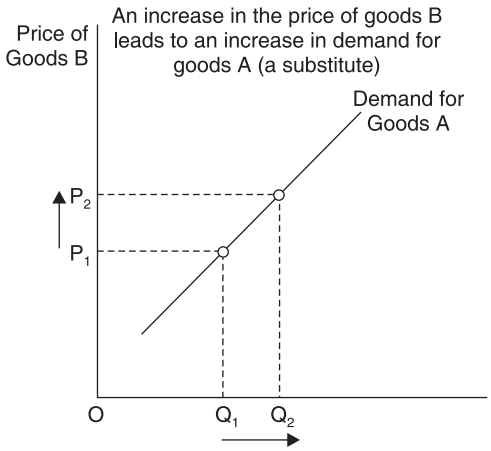

Fig. 3.21. Relationship between two substitutes.

3.9. Summary

- Under capitalism, price mechanism solves the central problems of the economy. Further, price of any commodity or economic service is determined by the interaction of demand and supply.
- Goods are demanded, because they have utility. These goods are demanded by everyone, who thinks that it is useful in satisfying his want.
- Demand is always defined with reference to price and a time period.
- The combinations of the prices and the quantities for an individual consumer is shown in the demand schedule.
- Market demand means the demand of all the consumers in the market for goods at a particular price. Market demand schedule shows the total demand of all the consumers in the market at various prices. It can be constructed by the summation of the individual demand schedules of all the individuals in the market.
- Price of the commodity is the most important determinant of demand.
- The demand for a commodity also depends upon the prices of the goods related to it.
- The demand for goods also depends upon income of the consumer.
- Law of demand explains the general tendency of the consumers to buy more goods at a lower price and less of it at a higher price. Lower price attracts consumers to buy more. Besides, some consumers who were not buying the goods at a higher price can also afford to buy it at a lower price. Consequently, with the fall in the price of the goods, demand for it generally increases. Thus, the law of demand expresses the inverse relationship between the price and the quantity demanded of a commodity, other things being equal.
- Normal goods have a positive income elasticity of demand so as consumers' income rises, more is demanded at each price level i.e., there is an outward shift of the demand curve.

- Inferior goods have a negative income elasticity of demand. Demand falls as income rises. Typically inferior goods or services tend to be products where there are superior goods available if the consumer has the money to be able to buy it.
- Knowledge of income elasticity of demand for different products helps firms predict the effect of a business cycle on sales.

3.10. Review Questions

1. What do you understand by the term 'demand' in economics? Will a beggar desiring to purchase a Maruti car constitute demand? Explain.
2. Briefly point out the main determinants of demand for a commodity.
3. Individual demand schedules of Anil Batla, Sanjeev Dhingra and Vinod Nanglee are given in the following table. Prepare market demand curve geometrically.

Price	Anil Batla	Sanjeev Dhingra	Vinod Nanglee
1	30	60	110
2	22	40	10
3	16	30	45
4	12	24	36
5	10	20	32
6	9	18	30

4. 4. State and explain the law of demand. State its assumptions and exceptions.
5. Give reasons for the following:
   (*a*) Why does demand for coffee rise, when price of tea increases?
   (*b*) Why does demand for car increase, when petrol becomes cheaper?
   (*c*) Why does demand for gur increase, when the price of sugar increases?
   (*d*) Give two reasons which may make a consumer buy more of a commodity even at a higher price.
6. Why does demand curve slope downward from left to right?
7. (*a*) When does a consumer buy a smaller quantity of the commodity at the same price?
   (*b*) When does a consumer buy more commodities at a particular price?
8. Distinguish between the following:
   (*i*) Demand schedule and demand curve
   (*ii*) Market demand schedule and household demand schedule
   (*iii*) Market demand curve and household demand curve
   (*iv*) Complimentary goods and substitute goods
   (*v*) Normal goods and inferior goods

Notes

(*vi*) Income demand cross demand

(*vii*) Income demand and substitution effect

(*viii*) A shift of demand curve and a movement along a demand curve

(*ix*) Extension in demand and increase in demand

(*x*) Contraction in demand and decrease in demand.

9. Write short notes on the following:

(*i*) Demand schedule for sugar

(*ii*) Demand curve

(*iii*) Giffen goods

(*iv*) Prestige goods

(*v*) Price effect.

Unit–4

Demand Forecasting

Notes

Structure

4.1. Introduction
- **4.1.1.** Applications of Forecasting

4.2. Demand Forecasting
- **4.2.1.** Process of Demand Forecasting

4.3. Methods of Demand Forecasting
- **4.3.1.** Market Size and Mind Share Research
- **4.3.2.** Market Size and Market Share Research
- **4.3.3.** Simple Sales Analysis and Forecasting
- **4.3.4.** Statistical Time-Series Analysis
- **4.3.5.** Expert Opinions or Delphi Method

4.4. Importance of Demand Forecasting

4.5. Areas of Demand Forecasting

4.6. Summary

4.7. Review Questions

4.1. Introduction

Forecasting is the estimation of the value of a variable (or set of variables) at some future point in time. In this, we will consider some methods for forecasing. A forecasting exercise is usually curried out in order to provide an aid to decision-making and in planning the future. Typically all such exercises work on the premise that if we can predict what the future will be like we can modify our behaviour now to be in a better position, than we otherwise would have been, when the future arrives.

Forecasting is an activity of estimating the quantity of a product or service that consumers will purchase. Demand forecasting involves techniques including both informal methods, such as educated guesses, and quantitative methods, such as the use of historical sales data or current data from test markets. Demand forecasting may be used in making pricing decisions, in assessing future capacity requirements, or in making decisions on whether to enter a new market.

4.1.1. Applications of Forecasting

The following are the applications of forecasting:

1. Inventory Control/Production Planning. Forecasting the demand for a product enables us to control the stock of raw materials and finished goods, plan the production schedule etc.

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2. Investment Policy. Forecasting financial information such as interest rates, exchange rates, share prices, the price of gold, etc. This is an area in which no one has yet developed a reliable (consistently accurate) forecasting technique (or at least if they have they haven't told anybody!)
3. Economic Policy. Forecasting economic information such as the growth in the economy, unemployment, the inflation rate etc is vital both the government and business in planning for the future.

4.2. Demand Forcasting

Every firm eventually has to sell its products. Questions that arise in this context are, for example: What sales channels should the firm use? How should a product be priced in the different channels? How can the firm prevent cannibalization across channels? And how should prices is adjusted due to seasonality? In this course, we focus on two elementary parts of this decision process namely, how to forecast the arising demand and how to set the best prices for the offered products.

Forecasting is used throughout most organizations. There are many approaches to producing forecasts, some of which rely on the judgment of individuals, whilst other methods are more formal and are based on statistical models. This course introduces the two most common statistical approaches–extrapolation, where the history of the variable being forcast is the singular element used to produce a forecast, and causal modeling, which seeks an explanation for changes.

Definitions

Some definitions of different economist related to Demand Forecasting given as under:

Evan J. Douglas– *"Demand forecasting will be taken to mean the process of finding the values for demand in future time periods."*

Cundiff and Still– *"Demand forecasting is an estimation of demand during a specified period. Which estimate is tied to a proposed marketing plan and which assumes a particular set of uncontrollable and competitive forces?"*

Forecasting can be broadly be classified into two categories:

1. **Passive forecasting.** Where prediction about future is based on the assumption that the firm does not change the course of its action; and
2. **Action Forecasting.** Where forecasting is done under the condition of likely future changes in the actions by the firm.

4.2.1. Process of Demand Forecasting

The following steps are involved in the process of demand forecasting:

1. **Assemble Historical Data.** These data should reflect current and historical demand for the services you wish to examine. It is important to decide at the outset what level of detail you require for the forecast.
2. **Analyse Historical Trends.** Examine at least three years of data to identify key trend (absolute change, percentage change, and average annual percentage change) in the services you wish to include in the forecast.

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3. **Identify Key Demand Drivers.** Key drivers of population-based demand including population growth and aging and changes in technology that affect service-specific use rates.
4. **Identify Relevant Benchmarks.** Such benchmarks provide a point of reference for determining the extent to which demand trends in your service area are in line with broad marketplace or national trends. Relevant benchmarks include use rates in comparable markets established best practices, guidelines and performance measures.
5. **Model Existing Conditions.** Develop a spreadsheet model the best replicates the late verifiable market data and utilization statistics, and that best projects the trends that have occurring since. One difficulty is that the latest verifiable market data or utilization statistics for other providers may be more than a year old. Nevertheless, historical data and historical trends shot be used to develop the most reasonable combination of assumptions about current conditions they demand drivers. If the model cannot replicate existing conditions, it cannot be used to dict future demand.
6. **Develop Core Assumptions for Population-based Demand.** Key factors affecting such hand include population growth, aging, and use rates. Information for making assumptions but population growth and aging generally are available from demographic firms or from national, state, or local governmental agencies. Core assumptions regarding population-based use as usually must be developed on a case-by-case, market-by-market basis. The core assumptions could take into account historical trends, external benchmarks; rates experienced elsewhere, the accepted effect of technology or medical advances on treatment patterns or location of care, participated effects of increases or decreases in uninsured population, and potential changes in her related factors. For each service you are considering, combining the core use-rate assumptions with the population provides a forecast of total market demand.
7. **Develop core Assumptions for Provider-level Demand.** Factors that determine demand on the provider level include market share, product mix or flow patterns, and marketing performance. These factors are often called controllable factors because they can be affected by specific actions of the provider.
8. **Create Baseline Forecast of future Demand.** This forecast should combine the core assumptions for both population-based and provider-level demand.
9. **Test Sensitivity of Projections of Changes in Core Assumptions.** Consider alternative scenarios with different sets of assumptions. Such scenarios might include:
    1. Low and high rates of changes in population-based use rates.
    2. More dramatic shifts in market share (aggressive growth versus loss of market share)
    3. Results that, for whatever reason, fall short of achieving projected operational efficiencies or other performance improvement targets.

Notes

4.3. Methods of Demand Forecasting

The better a company can assess future demand, the better it can plan its resources. Each company is exposed to three types of factors influencing demand–Company, Competitive and Macroeconomic factors. *Company factors* include competitor advertising, competitor product offerings, market share. *Macroeconomic factors* include income, economic growth and shocks.

There are several methods to assess and forecast demand. None yields demand numbers that are a 100% guaranteed. However, using more than one method improves accuracy and confidence Market Size and Market Share Research. One of the most accurate methods used today is the combination of Market Size Research and Mind Share Research.

4.3.1. Market Size and Mind Share Research

Market Size Research combined with Mind Share Research is a good way to forecast corporate demand. It combines macroeconomic trends with microeconomic and competitive performance. It is based on the fact that customers will only buy your product if they,

1. Need your product or service–macroeconomic trends
2. Are able to pay for your product or service–macroeconomic trends
3. Are aware of your product or service offerings–microeconomic performance
4. Perceive your company's offerings to have the best value–microeconomnic plus competitive performance.

Market Size Research quantifies the first two issues while Mind Share Research quantifies the last two. Together they quantify or forecast future corporate demand as well as future market share.

4.3.2. Market Size and Market Share Research

Market Size Research combined with Market Share Research is often used to forecast corporate demand. It combines macroeconomic trends with competitive performance. It is based on the fact that customers will only buy your product if they need your product or service and are able to pay for it (macroeconomic trends). It also assumes that your company's market share will not change in the future. The advantage of this method is that this information often well known and publicized. Several companies offer syndicated reports on these issues. Customized studies can be performed whenever the information of your market segment is not published. The disadvantage lies in the assumption that your market share stays stable.

4.3.3. Simple Sales Analysis and Forecasting

Past sales can be used to forecast future demand. Past sales are broken into:

- Trend analysis: used for long-term forecasting; obtained by curve-fitting past sales with either linear or non-linear regression.
- Cycle analysis: used for intermediate range forecasting; up and down swings in sales.

- Seasonality analysis: used for short-term forecasting; hourly, weekly, monthly, quarterly etc sales patterns.

While this method is easy to use, it is based on past behaviour and does not include new company, competitor or macroeconomic developments.

Notes

4.3.4. Statistical Time-Series Analysis

Sales numbers from several time periods are correlated to one or several factors such as price advertising, market share, competitor price demographics, product life stage, etc. Regression analysis and curve fitting is then used to predict future demand. The advantage of this method is that it includes relevant strategy as well as competitor and macroeconomic trends. The disadvantage is that the outcome may be biased because of important variables being left out variables not being completely independent, new competitive actions not being included.

4.3.5. Expert Opinions or Delphi Method

This method gathers information from industry experts until a consensus is reached about where the market is headed. The advantage of this method is that the information comes from the sources most involved with the market and thus represents the most accurate information available. The disadvantage of the Delphi method is the risk of competitive bias and a tender toward known information.

This method is a macroeconomic statistical time-series analysis and purely quantitative in future. It fits linear and nonlinear curves into time series and then extrapolating future values. Time series may be correlated to identify leading and lagging indicators. The advantage of this method is that recurring trends can be captured and extrapolated easily.

4.4. Importance of Demand Forecasting

Demand forecasting is useful for the industries or companies, some points are given as under:

1. **Probable Demand.** Demand forecasting help the different industries for find out the amount of products and services are needed in the near feature. It also helpful in planning about the products and services in feature.
2. **Employment.** By the help of demand forecast the companies are know about that how many employee are needed in feature. So it is helpful in the employment of new people.
3. **Investment.** Demand forecasting tells us about the new sources of income. It is help us by telling, which investment is profitable to us and which is not. So it is help in investment.
4. **Useful for Government.** Demand forecasting help the government in a number of ways. It tells about the quantity of importee and exporter in feature.
5. **Required Raw Material.** By the help of demand forecasting the forms are find out how much quantity of commodity they are produced in near feature and also how much quantity of raw material are required.

Notes

4.5. Areas of Demand Forecasting

Every organization uses forecasts to help it organize and plan its activities. Forecast plays a key role in operational decisions, market planning, budgeting and financial analysis. This course considers how forecasts are used in an organization to help its short-term operational decisions and its longer term marketing activities. The first part of the course discusses how forecasts are used by organization and how they are produced. Different techniques are appropriate for these different problem. Short-term extrapolative models are primarily used in operations. This course will introduce the basic statistics of time series analysis and examine one common extrapolative method in depth, exponential smoothing. In addition, the evaluation of such forecasting methods will be explained. Demand Forecasting tackles four troublesome areas that, if not adeptly managed, can undermine the validity of a company's forecasting processes. These are:

1. **Demand cleansing.** Promotions, markdowns, weather and entry errors are just some of the factors that can distort your forecasts. Demand Forecasting has built-in demand cleansing so that forecasters won't misled by these anomalies.
2. **Seasonal Profiling.** How do you account for seasonal curves? Demand Forecasting helps you identify trends and seasonal patterns to get a clear picture of the selling curve for a specific time period, product and location. Seasonal profile management in Demand Forecasting automatically accounts for seasonal curves related to moving holidays, has advanced profiling science that selects and assigns the best profile from multiple profile/aggregation iterations and can optionally do an automatic refresh of profiles just before a SKU comes into its next season.
3. **Demand Forecasting.** Whether initializing a forecast for the first time, re-initializing after a structural change in demand history or periodically updating the forecast based on recent demand, Demand Forecasting uses our Universal Forecast MethodTM that dynamically senses demand and adapts the proper forecasting components from multiple forecast methodologies to fit the demand signal that gives the best forecast.
4. **Exception Management.** Without an efficient, proactive approach to resolve forecast errors managing exceptions can be time-consuming and costly. Our Advanced Exception Management gives you the flexibility to adjust the logic and business rules that govern the creation and management of exceptions. This tool improves productivity by enabling automatic detection and self-correction of many problems.

4.6. Summary

- Forecasting is the estimation of the value of a variable (or set of variables) at some future point in time.
- A forecasting exercise is usually carried out in order to provide an aid to decision-making and in planning the future.

- Forecasting is an activity of estimating the quantity of a product or service that consumers will purchase. Demand forecasting involves techniques including both informal methods, such as educated guesses, and quantitative methods, such as the use of historical sales data or current data from test markets.
- Passive Forecasting. Where prediction about future is based on the assumption that the firm does not change the course of its action; and
- Action Forecasting. Where forecasting is done under the condition of likely future changes in the actions by the firm.
- The better a company can assess future demand, the better it can plan its resources. Each company is exposed to three types of factors influencing demand–Company, Competitive and Macroeconomic factors. Company factors include market share trends, changes in strategy and implementation, changes in brand value. Competitive factors include competitor advertising, competitor product offerings, market share. Macroeconomic factors include income, economic growth and shocks.

4.7. Review Questions

1. What is demand forecasting? Explain the process of demand forecasting.
2. Define demand forecasting and explain methods of demand forecasting.
3. Explain process and methods of demand forecasting.
4. Explain demand forecasting with the help of its applications.

Unit–5

Production Concepts and Analysis

Notes

Structure

5.1. Introduction
5.2. Factors of Production
5.3. Land
5.4. Labour
5.5. Capital
5.6. Enterprise
5.7. Production Function: Input-output Relationship
5.8. Summary
5.9. Review Questions

5.1. Introduction

Having discussed the demand side of the price theory, we now proceed to discuss the supply side. Supply side relates to the production of goods and services. Production of goods depends on the cost of production, which in turn depends on the prices of inputs or the factors of production. Cost of production is determined by the physical relationship between inputs and outputs. In the theory of production, we largely discuss the relation between inputs and output.

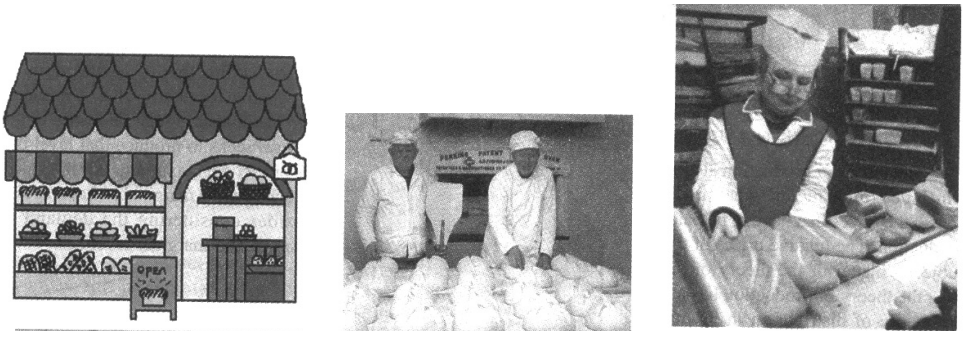

Fig. 5.1. Production means transformation of inputs into output.

Meaning of Production

Production is sometimes defined as the creation of utility or the creation of wants - satisfying goods' and services. It is said that just as man cannot destroy matter, he also cannot create matter. "If consuming means extracting utilities from," says Fraser, "producing means putting utility into." But this is not a scientifically

correct definition to produce a thing, which has utility, but not value is not production in the economic sense. One may spread the cult of Yoga and promote the physical and spiritual well being of one's friends—a thing of great utility but unless one makes it one's profession, his activities will not come under production.

Production, therefore, should be defined, not as creation of utility, but creation (or addition) of value. Utilities are created in three forms: (*i*) form utility, (*ii*) time utility, and (*iii*) place utility.

Production essentially means transformation of one set of goods into another. A good may be transformed by being physically changed (from utility); or being transported to the place of use (place utility) or being kept in store till required time (time utility). Pure exchange is also an act of transformation.

5.2. Factors of Production

Productive resources required to produce a given product are called factors of production. These productive resources may be raw materials or services of the various categories of workers or of capitalism supplying capital or of entrepreneurs assembling the factors and organizing the work of production. They are now generally called 'inputs'. Fraser defined "factor of production as a group or class of original productive resources." The term "factor" is used for a class of productive elements, the individual members of which are known as "units" of the factor. Modern economists prefer to talk in terms of anonymous productive services rather than the classical factors of production.

The factors of production have been traditionally classified as land, labour, capital and organization (or enterprise). Now, we shall briefly deal with them one by one. These factors are complementary in the sense that their co-operation or combination is essential in the production process.

The typical situation in production is that a group of complementary factors is required between which there is some degree of substitutability. Between labour and capital, the relation is both of substitution and complementarily.

Specificity

A factor is said to be specific when it can be used for one purpose only and for none other, e.g., spare part of a particular machine.

Versatility

A factor is said to be versatile when it can be put to every and any use.

These are, however, two extremes. No factor is completely specific or versatile. That is, a factor can be put to several uses but not all uses. A factor of low versatility is called a specialized factor. The specific or specialized nature of the factors of production play an important role in the disposition of productive resources.

Notes

Fig. 5.2. Irrigated land and building.

5.3. Land

Meaning and Importance of Land

The term 'land' has been given a special meaning in economics. It does not mean soil as in the ordinary speech, but it is used in a much wider sense. In the words of Marshall, land means "the materials and the forces which nature gives freely for man's aid, in land and water, in air and light and heat." Land stands for all natural resources which yield an income or which have exchange value. It represents those natural resources, which are useful and scarce, actually or potentially.

Peculiarities of Land

In contrast to the other factors of production, land presents certain well-marked peculiarities:

(*i*) Land is nature's gift to man.

(*ii*) Land is fixed in quantity. It is said that land has no supply price. That is, price of land prevailing in the market cannot affect its supply; the price may be high or low, its supply remains the same.

(*iii*) Land is permanent. There are inherent properties of the land which Ricardo called 'original and indestructible.'

(*iv*) Land lacks mobility in the geographical sense.

(*v*) Finally, land provides infinite variation of degrees of fertility and situation so that no two pieces of land are exactly alike. This peculiarity explains the concept of margin of cultivation.

These are a few peculiarities of land and they have a bearing on economic rent.

5.4. Labour

In the ordinary speech, the term 'labour' means a mass of unskilled labour. But in Economics it is used in a wider sense. Any work, whether manual, or mental, which is undertaken for a monetary consideration, is called: 'labour' in Economics.

Any work done for the sake of pleasure or love does not fall under labour in the economic sense. In Marshall's words, "Any exertion of mind or body undergone partly or wholly with a view to some good other than the pleasure derived directly from the work is called labour."

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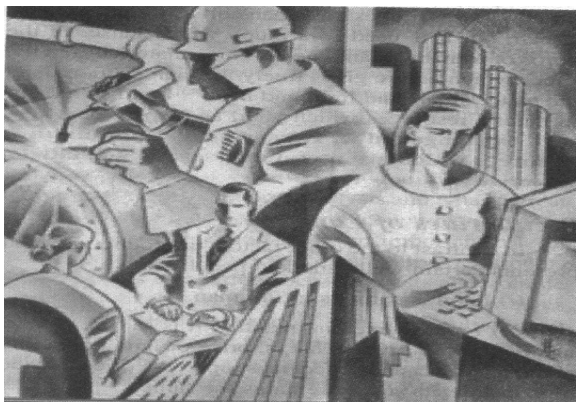

Fig. 5.3. The division of labour.

5.5. Capital

Meaning

Capital refers to that part of a man's wealth which is used in producing further wealth or which yields an income. But capital is not a primary or original factor of production. It is a 'produced means of production'. The term 'capital' is generally used for capital goods, e.g., plant and machinery, tools and accessories, stocks of raw materials, goods in process, and fuel. The raw materials are used up in a single act of consumption. Moreover, money spent on them is fully recovered when goods made with them are sold in the market. But plant and machinery is a permanent investment.

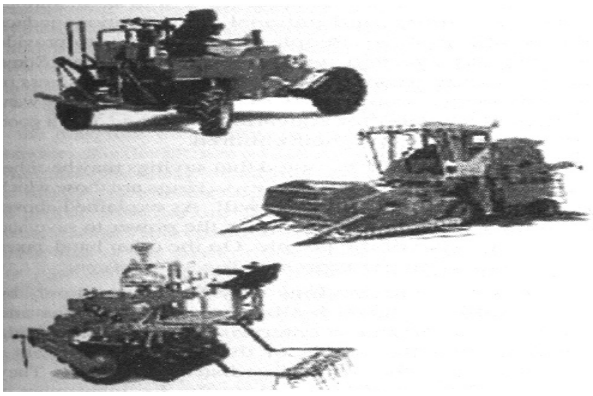

Fig. 5.4. Machines are capital goods used for production.

Is land capital? Land is not regarded as capital because (*a*) land is a free gift of nature but capital is man-made or is a 'produced' agent of production; (*b*) capital is perishable, whereas land is indestructible and permanent; (*c*) capital is mobile but land has no mobility; (*d*) the amount of capital can be increased but the quantity of land is fixed and limited; and (*e*) income from capital is uniform whereas rent of land varies.

Importance of Capital

Capital plays a vital role in the modern productive system. Production without capital is hard for us even to imagine. Nature cannot furnish goods and materials to man unless he has the tools and machines for mining, farming, fishing, etc.

Notes

Because of its strategic role in raising productivity, capital occupies a central position in the process of economic development. In fact, capital formation is the very core of economic development.

Another important economic role of capital formation is the creation of employment opportunities in the country. Capital formation creates employment at two stages. First, when the capital is produced, some workers have to be employed to make capital goods like machinery, factories, dams, irrigation works, etc. Secondly, more men have to be employed when capital has to be used for producing further goods.

5.6. Enterprise

The fourth factor of production is enterprise, which is supplied by the entrepreneur.

Entrepreneur's Role

The role that the entrepreneur plays consists in co-ordinating and correlating the other factors of production. He starts the work, organizes and supervises it. He undertakes to remunerate all the factors of production: to pay rent to the landlord, interest on the borrowed capital, and wages to labour, and pays them in advance of the sale of goods. The residue, if any, is his. Nothing may be left after he has made the necessary payments. In that case, his venture will have been miscarried. But it is also possible that he may be lucky enough to make a handsome profit. Whatever may be the outcome, he must be prepared to accept it. He thus takes the final responsibility of the business.

If he has anticipated the consumers' wishes right and interpreted them correctly, he is amply rewarded. Organizing and risk-taking, or 'uncertainty is bearing', as it is sometimes called, are the two chief functions of the modern entrepreneur.

The entrepreneur is the innovator. Innovation by the entrepreneur implies a variety of things. It may mean the introduction of a new method of production or an improvement in the old method. It may consist of the introduction of a new commodity like the transistor radio sets or a new make of an old product, e.g., yet another brand of toothpaste. Innovation may refer to the discovery of new materials; fresh sources of old materials, or new uses for materials or final goods. It also includes the opening up of new markets. Innovation may also take the form of new techniques in the way of administration, finance, marketing, or human relations inside the business and public relations outside, i.e., with suppliers of material and customers of products. It is involved, finally, when new forms of business organizations are instituted, such as chain stores, the merger of several establishments, or a monopolistic combination among producers.

It will be easily understood that uncertainty is inherent in the making of the decisions like those enumerated earlier and also in any innovations that may be

adopted. The all–embracing function that the entrepreneur performs is, therefore, that of bearing uncertainty.

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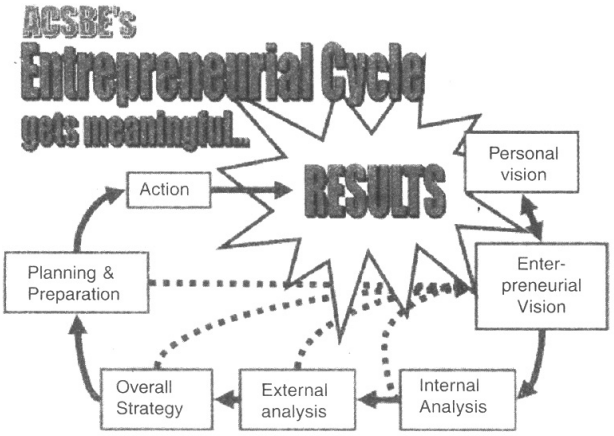

Fig. 5.5. Entrepreneurship.

5.7. Production Function: Input-output Relationship

Production function may be defined as the functional relationship between physical inputs (i.e., factors of production) and physical outputs, i.e., the quantity of goods produced. As Stigler puts it, "the production function is the name given to the relationship between the rates of input of productive services and the rate of output of product. It is the economist's summary of technological knowledge."

Thus, the production function expresses the relationship between quantity of output and the quantities of various inputs used in production. The physical relationship between a firm's physical input and output depends on a given state of technological knowledge.

Like demand, production function refers to a period of time. Accordingly, it refers to a flow of inputs resulting in a flow of outputs over a period of time, leaving prices aside. It shows the maximum amount of output that can be produced from a given set of inputs in the existing state of technology. The output will change when the quantity of any input is changed or the minimum quantities of various inputs required to produce a given quantity are changed.

In real life, a manufacturer wants to know how much of the various factors or inputs, viz., land (i.e., natural resources), labour and capital will be required to produce a unit or given quantity of a commodity during a given period of time. It is necessary for him to know this so that he may be able not only to assess his requirements of productive services but also roughly to estimate the probable cost. It will thus indicate the varieties of the productive resources and their possible combinations used for the purposes of production.

Production function of course depends, inter alia, on (*a*) quantities of resources used, (*b*) state of technical knowledge, (*c*) possible processes, (*d*) size of the firms, (*e*) nature of organization, (*f*) relative prices of the factors of production and the manner in which the factors of production are combined. As these things change, production function will change too. For instance, output can be increased by

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increasing the quantity of factors of production or of some of them. It can also be increased by varying the proportion in which the factors are combined. Adoption of more efficient techniques of production, too, will add to the output. The less efficient the techniques the smaller will be the output.

Production changes with period of time. In the very long period, it changes altogether because the same inputs produce different outputs. In the long-run, the production function depicts the whole set of choices available to the producer, i.e., what inputs will produce what output. In the short-run, the choices available to the producer are restricted because some of the factors are fixed and cannot be changed in the short period and only some can be varied. In this situation, the producer tries to find out the relation between the variable inputs and the outputs.

Since production function is concerned with physical aspects of production, it is more a concern of an engineer or a technician than of an economist. Only a technician can say what specific quantity of a good can be produced by the use of the various productive resources and their combinations.

Production function can be expressed as under: $x = f(a, b, c, d, \ldots\ldots)$

Here X is the output of a commodity per unit of time and *a, b, c, d*, ... are the various productive resources which go into the making of the quantity of the commodity; *f* is function, i.e., which varies.

Every management has to make a choice of the production function depending not only on industrial knowledge and the prices of the various factors of production but also on its own capacity to manage. It has also to select the various factors and knit them together in economical combinations. These two choices are interlinked. The over-riding consideration is to seek a combination, which gives the minimum average cost and maximum aggregate profit.

For understanding the nature of production function the following points may be emphasized:

(*i*) The production function represents a purely technical relationship in physical quantities between the inputs of factors and the output of the products, it has no reference to money price. The price factor is left out altogether.

(*ii*) The output is the result of a joint use of the factors of production. It is obvious that the physical productivity of one factor can be measured only in the context of this factor being used in conjunction with other factors.

(*iii*) The nature or the quantity of the various factors and the manner in which they are combined will depend on the state of technical knowledge. For instance, labour productivity will depend on the quality of labour as determined by their education and training. Similarly, the productivity of machines will be determined by the technical advances embodied in them. Again, it is on the basis of technical knowledge at the time that labour, machines and other factors will be combined in the processes of production. Thus, the state of technical knowledge is treated as given (i.e., as a parameter) for specifying a production function A change in technology will mean a shift to another production function. It will alter

the cost condition, improvement in technology will result in a larger output from a given combination of the factors of production.

(*iv*) In specifying the production function of a firm, we have to take into account the variability of the factors of production and also whether they are divisible or indivisible: These features of the factors of production will determine their productivities and hence, the nature of the production function.

Notes

Types

Production function may take several forms: Broadly speaking (*a*) it can be a fixed proportions production function, or (*b*) it can be a variable proportions production function. In the case of fixedproportions production function, the factors of production are used in a fixed proportion. For instance, a fixed number of workers may be required to produce a unit/units of the product and this proportion cannot be varied by substituting one factor for the other factors. In the case of variable proportions production function, the technical coefficient of production is variable. In other words, the quantity of a factor of production required to produce a given unit of product can be varied by substituting some other factor/factors in its place. This means that in this case a given quantity of a product can be turned out by several alternative combinations of factors of production as is shown in an iso-quant map.

Suppose we require 40 workers to produce 200 units of a product. The technical coefficient of production in this case is 1/5. In case the technical coefficient of production is fixed then in a case like this one-fifth of labour must be employed for the production of a unit of the commodity in question and there is no scope for varying its proportion through substitution of some other factor. This is the case of fixed proportions production function in which the factors of production e.g., labour and capital must be used in fixed proportions in the production of a certain level of output.

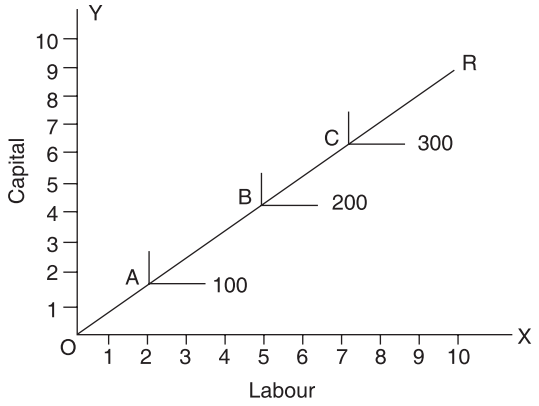

Fig. 5.6. The fixed proportion production function.

The fixed proportion production function can be illustrated by the following diagram:

In this diagram, OR represents the fixed labour capital ratio. This ratio must be maintained whatever the level of output. Since this ratio is fixed, the isoquants relating to such a production function are shown as right-angles. Suppose the ratio

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is 2 : 3 i.e., 2 units of capital and 3 units of labour, when 100 units of the product are to be produced; then for producing 200 units 4 units of capital and 6 units of labour will be required, and so on. It may be noticed that along each iso-quant, the marginal product of a factor is zero. For instance, at B an iso-quant of 200, if the amount of capital used is fixed the use of extra labour makes no addition to the total product, i.e., the marginal product of labour is zero. However, doubling both factors will result in doubling the output, and so on.

In this case, as already mentioned, the ratio in which the factors of production are used is not fixed but it is variable. That is, a given quantity of the product can be produced by several alternative combinations of factors. In the iso-quant map various equal product curves are drawn to show how different combinations of factors of production can be used to produce a given level of output.

Linear Homogeneous Production Function

The linear homogeneous production function implies that if all the factors of production are increased in same proportion, the output also increases in the same proportion. That is, the doubling of all inputs will double the output and trebling them will result in the trebling of the output, and so on. This represents a case of constant returns to scale. This type of production function is called by the economists as a well behaved production function because it can be easily handled and used in empirical studies. It can be used by computers in calculations. That is why it is widely used in linear programming and input-output analysis. It is also extensively used in model analysis of production, distribution and economic growth.

This is a production function, which is homogeneous of the first degree. That is, it shows that the increase in output in the same proportion follows a given change in the factors of production. This has been put mathematically as:

$$mP = f(mX, mY)$$

Here m is any number and K means constant. This function is homogeneous of the Kth degree. If K is equal to one then this homogeneous function is homogeneous of the first degree and if K is equal to two it is homogeneous of the second degree, and so on. If K is greater than one the production function gives increasing returns to scale and if it is less than one it gives decreasing returns to scale. In the case of homogeneous production function, the expansion path is always a straight line through the origin. This means that in the case of homogeneous production function of the first degree, given constant relative factor prices, the proportions between the factors used will always be the same whatever the level of output. This makes the task of the entrepreneur easy. Having hit on optimum factor proportions, he need not change the decision so long as the relative prices of the factors remain unchanged.

Cobb-Douglas Production Function

A well known empirical production function is the Cobb-Douglas production function. It takes two inputs, labour and capital, and is expressed by the following equation:

$$Q = Kl^{a} C(I - a)$$

Here Q is the quantity of output, L is the labour employed, K and *a* are positive constants ($a < 1$) and C is the quantity of capital used.

5.8. Summary

Notes

- Production in economics is generally understood as the transformation of inputs into outputs. The inputs are what a firm buys (i.e., productive resources) and outputs (i.e., goods and services produced) what it sells.
- Productive resources required to produce a given product are called factors of production. These productive resources may be raw materials or services of the various categories of workers or of capitalism supplying capital or of entrepreneurs assembling the factors and organizing the work of production.
- Production function may be defined as the functional relationship between physical inputs (i.e., factors of production) and physical outputs, i.e., the quantity of goods produced.

5.9. Review Questions

1. What do you mean by production? Discuss various factors of production.
2. Explain a linear homogeneous production function.
3. What is 'production function'? How does it help in understanding a producer's equilibrium?
4. Explain with the help of production possibility curve how economics is concerned with the problem of employment and allocation and growth of a community's resources.
5. Explain the following problems in economics with the help of production possibility curve: (*i*) Choice between the production of consumer goods and producer goods in an economy; (*ii*) The problem of unemployed resources; (*iii*) The problem of economic growth.

Unit–6

Laws of Return

Notes

Structure

6.1. Introduction
6.2. Law of Diminishing Returns
6.3. The Law of Variable Proportions
6.4. Average-Marginal Relations
6.5. Law of Increasing Returns
6.6. Law of Constant Returns
6.7. Returns to Scale
6.8. Summary
6.9. Review Questions

6.1. Introduction

We shall first study the laws of return, which are different aspects of one law, viz., the law of variable proportions, and then returns to scale.

There are three laws of returns known to economists, the laws of diminishing, increasing and constant return. "There is said to be increasing, decreasing or constant returns accordingly as the marginal returns rise, fall or remain unchanged" as the quantity of a factor of production is increased. In terms of cost, an industry is subject to increasing, decreasing or constant returns accordingly as the marginal cost of production falls, rises or remains the same, respectively, with the expansion of an industry.

6.2. Law of Diminishing Returns

Statement of the Law

In the absence of the law of diminishing returns, "the science of political economy", says Cairnes, "would be as completely revolutionized as if human nature itself were altered". Such is the importance of the law of diminishing returns in economic theory.

The law of diminishing returns was supposed to have a special application to agriculture. It is the practical experience of every farmer that "successive applications of labour and capital to a given area of land must ultimately, other things remaining the same, yield a less than proportionate increase in produce." If by doubling labour and capital he could double the yield of his land and so on, it can be easily seen that

one acre of land could be made to produce as much wheat as could suffice for the entire population of the world. This cannot be done but simply due to the operation of the law of diminishing returns. If investment is increased, the total yield will no doubt increase, but at a diminishing rate.

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Marshall stated the law thus: "An increase in capital and labour applied in the cultivation of land causes in general less than proportionate increase in the amount of produce raised, unless it happens to coincide with an improvement in the art of agriculture." The phrase 'in general' in this statement is important. It means that there may be cases where the law does not hold good. It refers to limitations of the law.

Table 6.1. Three aspects of the law of diminishing returns.

No. of workers	Total return	Marginal return	Average return
(1)	(2)	(3)	(4)
1	80	80	80
2	170	90	85
3	270	100	90
		–	
4	368	98	92
			–
5	430	62	86
6	480	50	80
7	504	24	72
8	504	0	63
9	495	– 9	55
10	440	– 55	44

From the Table 6.1, it appears that there are three different aspects of the law of diminishing returns:

(1) Law of Total Diminishing Returns (Column 2): In this sense, the returns begin to diminish from the 9th worker. Every successive worker employed does make some addition to the total output. But the 8th adds nothing and the 9th and 10th are a positive nuisance. As workers cannot be productive, no prudent farmer will employ more than seven workers in the conditions represented by Table 6.1.

(2) Law of Diminishing Marginal Returns (Column 3): Marginal returns go on increasing up to the 3rd worker. This is so because the proportion of workers to land was at first insufficient and the land was not being properly tilled. This phase of cultivation is unstable and will not be found in practice. When the farmer knows that he can get more than proportionate return by employing an extra hand, he will certainly do so. The marginal, i.e., the additional, return goes on falling from the 3rd man onwards till it

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drops down to zero at the 8th, the 9th and 10th men are merely a cause of obstruction to the others and are responsible in making the marginal return negative. The point at which the addition made to the total output by each successive unit of the variable factor starts diminishing is known as the point of diminishing marginal returns.

It can be seen that the total output is at its maximum when marginal output is zero. It should be remembered that the marginal return is not what can be attributed to the last unit whose employment is considered just worthwhile, as all men are supposed to be alike. The marginal return is simply the addition that the marginal unit makes to the total return.

(3) Law of Diminishing Average Returns (Column 4): The average return reaches the maximum at the 4th worker, i.e., one step later than the marginal return reaches the maximum. Then the marginal return falls more sharply. The two equalize somewhere between the 4th and 5th, i.e., when the 5th worker works part-time. But we do not employ men in fractions in real life. Therefore, it is not always possible to equalize the marginal and the average returns. It is also clear that it is possible for the average output to increase while the marginal output falls.

Diagrammatic Representation. The law can be diagrammatically represented as in Fig. 6.1.

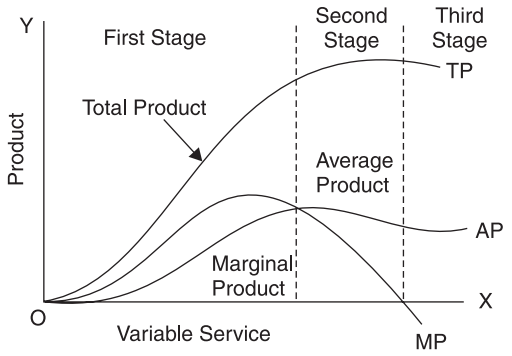

Fig. 6.1. Stages of the law of diminishing returns.

The total production (i.e., return) goes on increasing till it reaches the maximum where the third stage starts. The marginal return reaches the maximum at the earliest and starts diminishing at the first stage. The average return starts diminishing next, i.e., where the second stage begins.

This is in keeping with the above table. Obviously, no sensible entrepreneur will operate in the third stage where the marginal product is zero, unless, ofcourse, the variable factor is free. Economically, the second stage is the significant region where the average product is greater than the marginal product, which is still positive. It can be seen that the total output curve is the steepest where the marginal output is the largest. The law of diminishing returns is also called the law of diminishing physical productivity.

Limitations of the Law of Diminishing Returns

The law of diminishing returns does not apply to all situations. There are several exceptions to the law as it applies in agriculture:

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(i) Improved methods of cultivation: Man's ingenuity is ever striving to counteract the operation of this law by improving the technique of cultivation. Scientific rotation of crops, improved seeds, modern implements, artificial manures and better irrigation facilities, etc. is bound to give increasing return. But science cannot keep pace with the increasing demand for food. The niggardliness of nature must ultimately assert itself and the law must operate sooner or later.

(*ii*) New soil: When a virgin soil is brought under cultivation, the additional return for each successive dose of labour and capital may increase for a time. But after a point, the tendency of diminishing returns will set in. Hence, in the case of a new soil, the law of diminishing returns does not apply in the beginning.

(*iii*) Insufficient capital: If capital applied hitherto has not been insufficient, increased application will, at first, yield more than proportionate return. Later, however, the marginal return will decrease. The early stage is an exception to the law of diminishing return.

How to Counteract the Law

Anything, which improves the quality of the land and makes it yield more, or anything, which adds to the value of the yield, will check the operation of the law. Use of modern implements, judicious mixing of soil and manures, careful selection of the seed and proper sowing, deeper and deeper tillage, and the provision of ample irrigation facilities, etc. can enable a farmer to counteract the working of the law. Scientific cultivation, in short, can check the operation of the law of diminishing returns.

Application of the Law

Besides agriculture, the law also applies to extractive industries like mining, fisheries and also to building industry. The law operates when mining operations are extended to inferior, distant or deeper mines, when fishing operations are concentrated in one place and when more and more storeys are raised on a building.

Why the Law Specially Applies to Agriculture

We have seen that the law of diminishing returns has a wide application. But it specially applies to agriculture and other extractive industries. One thing that is common to all these industries is the supremacy of nature. It is, therefore, often remarked that the part that nature plays in production corresponds to diminishing returns and the part which man plays conforms to the law of increasing returns. The inference is that agriculture, where nature is supreme, is subject to diminishing returns, while industry, where man is supreme, is subject to increasing returns.

There are several reasons why agriculture is subject to the law of diminishing returns:

(*i*) The agricultural operations are spread out over a wide area, and consequently supervision cannot be very effective.

(*ii*) Scope for the use of specialized machinery is also very limited. Therefore, economies of large-scale production cannot be reaped.

(*iii*) There are further limitations arising from the seasonal nature of the industry. Agricultural operations are likely to be interrupted by rain and other climatic changes. Man is not a complete master of nature, and it is no wonder that the law of diminishing returns operates in agriculture.

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Similarly, it is understandable that manufacturing industries should be subject to the law of increasing return. Here man's ingenuity has the fullest scope to show itself. By the introduction of division of labour and the use of the most modern appliances, production can be greatly increased. Concentration of workers under one roof renders supervision easy and effective. Nature's malignant influences are thus held constantly at bay. Man is free to plan, undertake and execute. He can realize all the possible economies, internal and external.

But it is wrong to say that agriculture is always subject to diminishing returns and manufacturing always to increasing returns. The law of diminishing returns applies everywhere. To borrow Wicksteed's words. "This law is as universal as the law of life itself." Its application is not confined to agriculture only; it applies to manufacturing industries too. If the industry is expanded too much and becomes unwieldy, supervision will become lax. The law of diminishing returns will, therefore, set in both in agriculture and industry earlier. The only difference is that in agriculture it sets and in industry much later.

Thus, both laws apply in all types of industrial extractive as well as manufacturing. As a matter of fact, they are two aspects of the same law, which also known as the Law of Variable Proportions.

Law of Diminishing Returns in a Firm

The discussion of the law of diminishing returns in relation to land, since the times of the English classical economists, has obscured its real significance. There is nothing peculiar about agriculture for the law to be exclusively associated with it. As a matter of fact, in agriculture, the law has been held in check by scientific cultivation in progressive countries. This is evident from the fact that whereas consumption of food has increased on account of higher standards of living, the number of people engaged in the production of food has actually gone down.

The fact is that the law of diminishing returns does not apply to agriculture alone. It has got a general application and can, therefore, be put in a general form. The law of diminishing returns simply refers to a principle of combination of the factors. In a general way, it can be stated that if a variable factor is combined with some constant factors, the average and the marginal return for that variable factor will diminish. Benham states the law thus: "As the proportion of one factor in a combination of factors is increased after a point the average and marginal product of that factor will diminish."

Why the Law of Diminishing Returns Operates

The operation of the law of diminishing returns can be attributed to several causes:

(*i*) Wrong Combination: In the initial stages, the fixed factor is not fully used since the units of variable factor are too few. Hence, increase in

the variable factor in the initial stages proves productive on account of fuller utilization of the fixed factor and of better co-operation and greater specialization in the variable factor units. We are moving towards the optimum combination. But after a stage, increase in the variable factor brings down the marginal return. Thus, the law of diminishing returns operates because the combination of the factors of production ceases to represent a correct proportion. It ceases to be an optimum combination. There is too much of one factor in relation to the others. The fixed factor has reached its maximum capacity and there is no further possibility of specialization of the variable factor. This explains the operation of the law of diminishing returns. When proper balance is restored the law of diminishing returns will no longer operate.

But the law of diminishing returns is a misnomer. We saw that in the beginning the marginal return increases. It is only ultimately that the law operates. This is why Bounding calls it "the law of eventually diminishing marginal physical productivity."

(*ii*) Scarcity of Factors: The law of diminishing returns operates due to the scarcity of the factors of production. In the words of Chapman, "The expansion of an industry, provided that additional supplies of some agent in production, which is essential cannot be obtained, is invariably accompanied at once or eventually by decreasing returns, other things being equal."

(*iii*) Imperfect Substitutes: A little reflection will show that the law of diminishing returns operates because the factors of production are imperfect substitutes for one another. As Robinson says, "What the law of diminishing returns really states is that there is a limit to the extent to which one factor of production can be substituted for another, or, in other words, that the elasticity of substitution between factors is not infinite. If this were not true it would be possible when one factor of production is fixed in amount and the rest are in perfectly elastic supply, to produce part of the output with the aid of the fixed factor, and then, when optimum proportion between this factor and other factors was attained, to substitute some other factor for it and to increase output at constant cost. Thus, the law of diminishing returns entails that the various elements required for the production of any commodity should be divided into groups, each group being a factor of production, in such a way that the elasticity of substitution between one factor and another is less than infinite.

Importance of the Law of Diminishing Returns

We have quoted Cairns when he says that in the absence of the law of diminishing returns, "The science of political economy would be as completely revolutionized as if human nature itself were altered." Such is the great importance of the law of diminishing returns. The law of diminishing returns has a very wide, almost universal application. Uptill Marshall, it was thought that the law of diminishing returns applied to agriculture whereas the laws of increasing or constant returns applied to manufacture. But it is now held that the law of diminishing returns applies in all

fields of production, whether agriculture, mining or manufacture. Whenever we find that some factors of production are fixed and cannot be varied and other factors are varied, then techniques of production remaining the same, diminishing returns are bound to follow, sooner or later. There is no escape.

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The validity of the law of diminishing returns is not merely based on theoretical reasoning but it has been supported by extensive empirical evidence. It has been remarked that if the diminishing return did not occur we could grow sufficient food grains in a flower pot merely by increasing the dozes of labour and capital. It is obvious that if the successive applications of dozes of labour and capital resulted in obtaining constant returns, the whole population of the world could be fed by growing crops on a tiny piece of land. As population increased, we could use more labour and capital on a piece of land to get proportionate increase in agricultural output and there would be no fear of famine and starvation. As Professor Lipsey remarks, "Indeed, where hypothesis of diminishing returns is incorrect, there would be no fear that the present population explosion will bring with it a food crisis. If the marginal product of additional worker applied to a fixed quantity of land were constant, then the world's food production would be expanded in proportion to the increase in population merely by keeping the same proportion of the population on farms. As it is, diminishing returns means an inexorable decline in the marginal product of each additional labourer as an expanding population is applied, with static techniques, to a fixed world supply of agriculture. But let there be no misunderstanding. We need not arrive at the dismal conclusion that since the law of diminishing returns is universally true, the average and marginal returns must eventually decline and humanity is doomed. There is no such fear. Experience of both developed technology may be able to keep the law of diminishing returns in abeyance. We see from the Indian experience that improved technology has ushered in what is known as the 'green revolution' and, in a short span of time, we have not only been able to ban hunger and starvation from the land, but we have also now a comfortable surplus. The ghost of law of diminishing returns seems to have been laid.

At the same time, we must point out that this happy experience is no contradiction of the law of diminishing returns. The law clearly states that if there is no charge in technical knowledge, capital equipment, and other aids to production, the law of diminishing returns is kept in check for the time being. But who can say that the improvement in technology and addition to capital equipment will keep pace with a galloping population. We have only suspended the operation of the law of diminishing returns by improving techniques of production through the application of science and technology, but if we fail to keep up the technical progress in a sufficient measure, the law of diminishing returns may assert it self. As Lipsey observes, "Unless there is a continual and rapidly accelerating improvement in techniques of production, the population explosion must bring with it decline in living standards over much of the world and eventual widespread famine."

The law of diminishing returns has formed the basis of a number of economic doctrines propounded by the English classical economists, especially Malthus and Ricardo. It was represented as an inexorable law of nature. It accounted for a lot of pessimistic thinking in economics and earned for it the title of a 'dismal science' The Malthusian theory of population, which says that population increases faster than the

food supply, is obviously based on the fact that the production of food is subject to the law of diminishing returns.

Ricardian Theory of Rent: The Ricardian theory of rent explains the determination of rent on the assumption that inferior lands have to be cultivated on account of the operation of the law of diminishing returns. The margin of cultivation descends, and rent rises. The optimum size of business is explained again by the working of this law.

Theory of Distribution: The marginal productivity theory, which determines the share of a factor of production in the national dividend, is also based on the operation of this important law.

Conclusion

The law of diminishing returns, therefore, occupies a very important place in the realm of economic thought.

6.3. The Law of Variable Propoortions

The law of variable proportions (of which the law of diminishing returns is one aspect) shows the efficiency of factor combination. Incidentally, the three stages of the law of diminishing returns showed above throw light on how efficiently have the factors (land and labour) been combined in the process of production. The average return shows the amount of the product obtained per unit of labour for the various land-labour ratios and the total product column (Column 2) shows the total output obtained from that unit of land for the various land-labour ratios.

In stage I, as more and more labour is used, the average product of labour increases, which reflects the increasing efficiency of labour. In this stage, the total product increases also for this unit of land, which shows that the efficiency of land too is increasing. Hence, this stage shows that both land and labour are being efficiently utilized.

The second stage shows decreasing average product and marginal product of labour. But since the total output goes on increasing the marginal product is positive. This stage shows the decreasing efficiency of labour. But the efficiency of land continues to increase because the total return continues to increase. In the third stage, the average product (of labour) decreases still further. Also, the marginal product becomes negative and the total product is decreasing. Hence, in this stage, both labour and land have been used inefficiently.

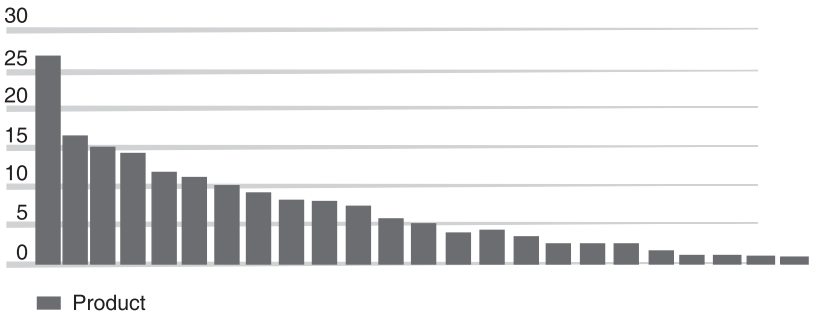

Fig. 6.2. Diminishing returns.

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Thus, the combination of land and labour attained maximum efficiency of labour at the boundary line between stage I and II and maximum efficiency of land at the boundary line between stage II and stage III. Stage II represents higher efficiency of land-labour ratio than that of the other two stages.

Notes

The productive resources of land and labour both command a price in the market and have to be paid for. Since, in stage I, product per unit of both land and labour increases, the firm will keep expanding and move to the boundary between stage I and stage II. But when it enters the second stage, it finds that the return per unit expenditure on labour decreases while that of land increases. The proportions in which land and labour will be used will depend on their relative prices or costs per unit. If the price of land is low relative to the price of labour, the firm will operate more in the beginning of stage II, and, conversely, less the price of labour relative to the price of land, it will operate towards the end of the stage II. Stages III and I are ruled out. Stage I is ruled out because throughout this stage average product of both land and labour are still increasing and stage III is ruled out because the average product of both factors is decreasing.

It will be seen that the name of the law "law of diminishing returns" is a misnomer. This law is also called the law of proportionality. This law tells us how the total output or marginal output is affected by a change in the proportion of the factors used. Since the return to the variable factor does not change at the same rate in all stages, it is also called the law of non-proportional returns.

When, after a stage, the marginal return begins to diminish, it is not due to the fact that either the prices of the factors of production have gone up or the price of the output has gone down. It is rather due to the technological facts underlying the production of the product in question. Every industry has its own peculiar set of technical facts; for example, agriculture is dominated by the nature of land and manufacturing industry by capital. In agriculture, the marginal return starts diminishing early, whereas in a manufacturing industry, it starts diminishing very late, which a wise entrepreneur can altogether avoid. In some industries, the return may remain constant. This is all due to the technological peculiarities of each industry.

In agriculture, marginal return increases in the beginning but then decreases later, whereas in industry it continues increasing but may decrease if the industry is expanded too much. It is thus wrong to say that one law applies in one industry and another in another industry. The fact is that there is only one law, which applies everywhere, and which is properly called the Law of Variable Proportions. This law operates in all industries, although its different stages are to be found in different industries or its different stages are larger or shorter in different industries. In some industries, the stage of increasing marginal return finishes earlier and diminishing marginal return starts as in agriculture and, in some other industries, the stage of increasing marginal return is so long that the marginal return starts diminishing only when the scale of production is unduly enlarged as in the case of almost all manufacturing industries.

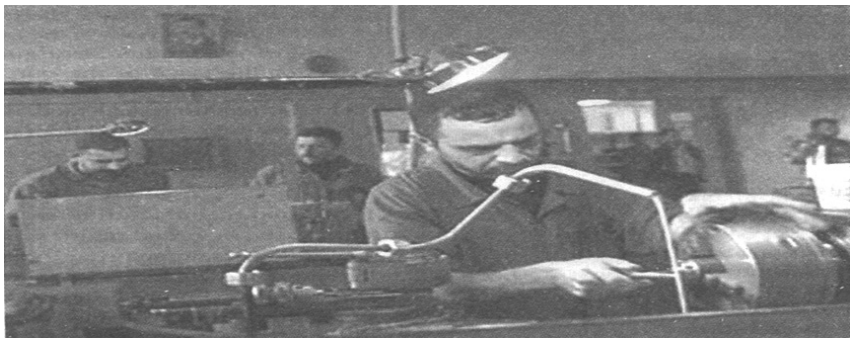

Fig. 6.3. Labour and capital.

The law of variable proportion occupies a very important place in economic theory. It describes the production function with one variable factor while the quantities of other factors of production are fixed. That is, it describes the input-output relation in a situation when the output is increased by increasing the quantity of one input, keeping the other inputs constant. When the quantity of one factor is increased and the quantities of the other factors of production are kept constant, naturally the proportion between the variable factors and the fixed factor is altered. That is, the ratio of the variable factor to that of the fixed factor goes on increasing as a quantity of the variable factor is increased. It is because in this law we study the effect on output of variations in factor proportion, this law is called the law of variable proportions. In fact, the law of variable proportions is the new name for the well-known law of diminishing returns.

Marshall, thought that there were three separate laws of production, viz., the laws of diminishing, increasing and constant returns. The modern economists are of the view that these three laws are not three separate laws but are only three phases of one general law of variable proportions.

The law of variable proportions has been variously stated by the economists. In the words of Stigler, "As equal increments of one input are added, the inputs of other productive services being held constant, beyond a certain point the result in increment of product will decrease, i.e., the marginal product will diminish." Professor Samuelson states the law thus, "An increase in some inputs relative to other fixed inputs will, in a given state of technology, cause output, to increase; but after a point the extra output resulting from the same additions of extra inputs will become less and less." Professor Benham also states the law almost in similar words, "As the proportion of one factor in a combination of factors is increased, after a point, first the marginal and then the average product of that factor will diminish."

It will be seen that these statements are really statements of the law of diminishing returns, which should be considered as an old name for the new law of variable proportions. Prof. Bounding considers that the expression 'diminishing returns' is a loose one, He, therefore, called it the law of Eventually Diminishing Marginal Physical Productivity. He defines the law thus, "As we increase the quantity of any one input which is combined with a fixed quantity of other inputs the marginal physical productivity of the variable input must actually decline."

Thus, we find from the statements of the law of variable proportions given above that this law relates to the behaviour of output as on the quantity of one factor is

varied by keeping the quantities of the other factors constant. It states further that the marginal product and the average product of the factor kept constant will eventually diminish.

Notes

Assumptions of the Law of Variable Proportions

The law of variable proportions, as stated above holds true under certain conditions. The following are its main assumptions:

(*a*) It is assumed that the state of technology remains unaltered. It is obvious that improvements in technology are bound to raise the marginal and average product and they will not diminish as the law says.

(b) It is also assumed that of the various inputs employed in production at least some must be kept constant. This is so because only in this way we can change the factor proportions and find out its effects on the output. Hence, this law does not apply where all factors of production are proportionately varied. Behaviour of output when all inputs are varied comes under, 'returns to scale' which we shall discuss later.

(*c*) The law of variable proportions is clearly based upon the possibility of varying proportions in which the various factors are combined in production. It does not apply to cases where the factors have to be used in fixed proportions to yield fixed products. In cases where the various factors are to be used in rigidly fixed proportions, the increase in one factor would not lead to any increase in input, that is, the marginal product of the factor will be zero and not diminishing. But such cases are very uncommon and hence the law of variable proportions has almost a universal application.

6.4. Average-Marginal Relations

When we study trends in marginal and average returns (or outputs) we can discover certain unique relationship between them:

(1) So long as the marginal return exceeds the average return (see columns 3 and 4 of Table 6.1), each new average return will be larger than the previous one, i.e., the average output continues to increase. Conversely, if average output is rising, it can be safely concluded that the marginal output is larger than the output.

(2) When the marginal return goes below the average return, average output begins to decline. This is so, because the new marginal return, which is lower, brings down the average. That is, when the average product is decreasing, the marginal product is less than the average product.

(3) The average output remains constant when the marginal and average returns are equal. Conversely, if the average output remains constant, it can be inferred that the marginal output is also constant and the two are equal. Also, when the average product is maximum, marginal product equals average product. In such cases, the average and marginal curves coincide and they are horizontal, parallel to the X-axis.

6.5. Law of Increasing Returns

Another aspect of the universal law of variable proportions is the law of increasing returns. An industry is subject to the law of increasing returns if extra investment in the industry is followed by more than proportionate returns, i.e, if the marginal product increases. In terms of cost, the law of increasing returns means the lowering of the marginal costs as industry is expanded. As marginal cost indicates price, we can say that the law of increasing returns operates in an industry if, with every expansion of its output, the price of the product falls.

Notes

These two laws of increasing and diminishing returns can also be explained in terms of the optimum business unit. We shall have increasing returns when we are moving towards the optimum and diminishing returns when we move beyond the optimum.

Why the Law of Increasing Returns Operates

We have already seen what economies can be reaped if the scale of production is increased. Advantages of specialization of labour and machinery and other commercial and miscellaneous economies make' it possible to lower the cost of production, and we have increasing returns.

Economies among the economies of mass production which contribute to greater productivity at less cost may be mentioned.

(*i*) Use of non-human and non-animal power resources (water and wind power, steam, electricity, atomic energy);

(*ii*) Automatic self-adjusting mechanism;

(*iii*) Use of standardized, interchangeable parts;

(*iv*) Breakdown of complex processes into simple repetitive operations;

(*v*) Specialization of functions and division of labour; and

(*vi*) Many other technological factors.

No Scarcity of Factors: The law of diminishing returns operates when there is dearth of an essential factor. But if there is no dearth, the law of increasing returns will operate. The expansion of an industry, provided that there is no dearth of suitable agents of production, tends to be accompanied, other things being equal, by increasing returns.

Right Combination: The law of diminishing returns operates when the factors have been combined in wrong proportions. Now when we try to correct the combination, increasing returns will follow till the balance is completely restored.

Full Use of Indivisible Factors: The concept of indivisibility, too, has a close bearing on the law of increasing returns. A manufacturer sets up a plant to cope with a peak demand, but in actual practice it may be producing below capacity. In that case, if an addition is made to some other factor or factors, the indivisible factor will be more fully employed, and increasing returns will follow.

Notes

6.6. Law of Constant Returns

There can be a situation when neither the law of diminishing returns nor the law of increasing returns operates, but there is instead constant return. An industry is subject to the law of constant returns when, whatever the output or scale of production, the cost per unit remains unaltered, or increased investment of labour and capital results in a proportionate increase in the output.

Marshall pointed out that the part played by nature corresponded to diminishing returns and the part played by man to increasing returns. That is why in agriculture, where nature is said to be supreme, there is diminishing return. In manufacturing industries, where man's ingenuity has the fullest play in effecting all sorts of economies unhampered by external forces, there operates the law of increasing returns. It is conceivable that some industry may lie midway between the two, where neither there is diminishing return nor increasing return, but there is constant return.

Think of an industry where the raw materials, representing nature's part, account for the same proportion of the total cost as the manufacturing cost which is man's part. In such a case, the law of constant return will operate.

In every industry, the two opposite tendencies are at work. When it is expanded some costs rise and the others fall. It is possible that there may be an industry where these two tendencies just neutralize each other, and we have constant return. The example of an industry making blankets out of pure natural wool is sometimes given in this connection. It is said that the raw material (wool) is subject to diminishing returns, but this tendency is just counter-balanced by the economies in the manufacturing costs, and there is a constant return.

The concept of the optimum can help us to understand the operation of the laws of returns. We have said that movement towards the optimum means increasing returns, and the movement beyond it the diminishing returns. But, if we keep to the optimum, for however short a period it may be, we shall have constant returns.

6.7. Returns to Scale

Distinction between Laws of Returns and Returns t Scale

The laws of returns are often confused with 'returns to scale'. The two may be clearly distinguished. By "returns to scale" is meant the behaviour of production or returns when all the productive factors are increased or decreased simultaneously in the same ratio. In other words, in returns to scale, we analyze the effect of doubling, trebling, and quadrupling and so on of all the inputs of productive resources on the output of the product.

The returns to scale may clearly be distinguished from the Law of Variable Proportions. In the law of variable proportions, while some co-operating factors of production may be increased (or decreased), at least one factor (e.g., land in agriculture or entrepreneur in industry) remains constant or cannot be increased, so that the proportion among the factors of production changes and we see how returns or output is affected by such changes in the supply of the productive resources. In returns to scale, on the other hand, all the necessary factors of production are

increased/decreased to the same extent so that whatever the scale of production, the proportion among the factors remains the same.

Three Phase of Returns to Scale

Notes

A layman, uninitiated into the techniques of economic analysis, would perhaps expect that, with the doubling of all productive factors, the output would also double and with trebling of all factors of production, production would also be trebled, and so on. But actually this is not so. In other words, actually the output or returns do not increase/decrease strictly according to the change in the scale.

We know that in the case of the law of variable proportions, as we increase some of the cooperating factors, the marginal product or return increases at first, then stays constant and ultimately it starts diminishing. Similarly, when we increase the scale, i.e., increase all the factors of production together to the same extent, the marginal product or return increases at first, i.e., up to a point, then constant for some further increases in the scale of production is increased still further.

Table 6.2. Returns of scale.

S.No.	Scale product	Total or returns (in quintals)	Marginal product (in quintals)	
1.	1 W + 3 A	2	2	Stage I: Increasing Returns
2.	2 W + 6 A	5	3	
3.	3 W + 9	9	4	
4.	4 W + 12 A	14	5	
5.	5 W + 15 A	19	5	Stage II: Constant Returns
6.	6 W + 18 A	24	5	
7.	7 W + 21 A	28	4	Stage III: Decreasing Returns
8.	8 W + 24 A	31	3	
9.	9 W + 27 A	33	2	

Note. 'W' stands for workers and 'A' stands for acres of land.

In other words, there are three distinct phases of, or stages in, the behaviour of the marginal product. Let us take a numerical example to explain the behaviour of the returns to scale.

In the Table 6.2 we see that, at the outset, when we employ one worker on 3 acres of land, the total product is 2 quintals. Now to increase output, we double the scale, but the total product increases to more than double (to 5 instead of 4 quintals) and when the scale is trebled, the total product increases from 5 quintals to 9 quintals—the increase this time being 4 quintals as against 3 in the previous case. In other words, the returns to scale have been increasing. If the scale of production is further increased, the marginal product remains constant up to a certain point and, beyond it, it (the marginal product) starts diminishing. In the table at Serial No.9, the marginal product or return falls to only 2 quintals.

Explanation

Notes

Now, we may try to explain why we get the above-mentioned three phases or stages, i.e., what makes the returns to scale behave in the manner they do. The chief reason of this kind of behaviour is that when in the beginning, the scale of production is increased, increased division of labour becomes possible and is adopted and, as a result thereof, output increases rather rapidly. In the Table 6.2, when there is only one worker working on three acres of land, there is no scope for division of labour. When there are two workers instead and six acres of land, i.e., the factors of production are doubled, there will be increased scope for division of labour and output not only doubles but increases still more and the returns to scale increase.

In this way, up to a certain point, the returns to scale will go on increasing until there is no further scope for division of labour. Beyond this point, the marginal product or the returns to scale will cease to increase and will remain constant for certain further increases in scale (e.g., in the Table 6.2 when 5 workers and 15 acres of land are used instead of 4 workers and 12 acres of land, the marginal product remains 5 quintals as before; similarly for Serial No. 5 to Serial No .6).

But when scale is increased beyond Serial No. 6, the scope for division of labour is reduced with the result that the marginal return or product begins to decline. In short, the main underlying cause of the changing returns to scale is the possibility or otherwise of the division of labour or specialization.

However, it is very important to state here, that, in actual life, the scale of production cannot be increased beyond a certain limit. To increase the scale of production means that all factors being used in production can be increased at will and indefinitely. But it is not so in practice. While land, labour and capital can be increased at will, organization or enterprise does not increase, since the entrepreneur or organizer remains the same. In other words, there is at least one factor of production which cannot be varied at will, and, hence when more output is desired, the proportion among the factors of production used must change.

Hence, the returns to scale are more of theoretical interest than being relevant to actual life. In practice, it is the law of variable proportions, which is of universal application.

Returns to scale can also be explained with the help of iso product or equal product curves. This is explained in the next chapter.

Causes of Diminishing Returns to Scale

Diseconomies, both internal and external, account for the diminishing returns to scale.

(We have discussed these diseconomies in the previous chapter).

6.8. Summary

- There are three laws of returns known to economists, the laws of diminishing, increasing and constant return.
- Marshall stated the law "An increase in capital and labour applied in the cultivation of land causes in general less than proportionate increase in the

amount of produce raised, unless it happens to coincide with an improvement in the art of agriculture."

- Cairns says that in the absence of the law of diminishing returns, "The science of political economy would be as completely revolutionized as if human nature itself were altered." Such is the great importance of the law of diminishing returns.
- The Malthusian theory of population, which says that population increases faster than the food supply, is obviously based on the fact that the production of food is subject to the law of diminishing returns.
- The Ricardian theory of rent explains the determination of rent on the assumption that inferior lands have to be cultivated on account of the operation of the law of diminishing returns. The margin of cultivation descends, and rent rises.
- Theory of Distribution: The marginal productivity theory, which determines the share of a factor of production in the national dividend, is also based on the operation of this important law.
- The law of variable proportions (of which the law of diminishing returns is one aspect) shows the efficiency of factor combination.
- The law of variable proportion occupies a very important place in economic theory. It describes the production function with one variable factor while the quantities of other factors of production are fixed. That is, it describes the input-output relation in a situation when the output is increased by increasing the quantity of one input, keeping the other inputs constant. When the quantity of one factor is increased and the quantities of the other factors of production are kept constant, naturally the proportion between the variable factors and the fixed factor is altered.
- Another aspect of the universal law of variable proportions is the law of increasing returns. An industry is subject to the law of increasing returns if extra investment in the industry is followed by more than proportionate returns, i.e, if the marginal product increases.

Notes

6.9. Review Questions

1. State and explain the law of diminishing returns and indicate its significance in economic theory and policy.
2. 'The part played by nature conforms to diminishing returns while the part which man plays conforms to increasing returns". Critically examine this statement.
3. State the law of diminishing marginal returns and in this context explain the significance of indivisibility of factors.
4. Discuss the view that diminishing returns arise out of defective factor proportions.
5. What do you understand by optimum factor combination? Explain fully with the aid of indifference curves.
6. State clearly the law of variable proportions. Illustrate diagrammatically. How does it affect the supply curve?

Or

Notes

The laws of diminishing returns and increasing returns are two phases of the law of variable proportions. Discuss.

7. Explain the law of increasing returns. Do increasing returns necessarily lead to monopoly?

Or

How far are increasing returns compatible with competition?

8. Enunciate the law of constant returns and indicate the cases where it operates.
9. Explain the reasons for the operation of (*a*) the law of diminishing returns, and (*b*) diminishing returns to scale.
10. What is the difference between law of returns and returns to scale? Enumerate the factors that cause decreasing returns to scale.

Unit–7

Cost and Cost Curves

Notes

Structure

7.1. Introduction
7.2. Nominal and Real Cost
7.3. Alternative, Opportunity or Transfer Costs
7.4. Social Cost
7.5. Entrepreneur's Cost
7.6. Short-Run and Long-Run Cost Curves
7.7. Summary
7.8. Review Questions

7.1. Introduction

The cost of production of an individual firm operating in a market has an important influence on the market supply of a commodity. It is very necessary to have a clear idea about the concept of cost of production and then proceed to study the cost curves.

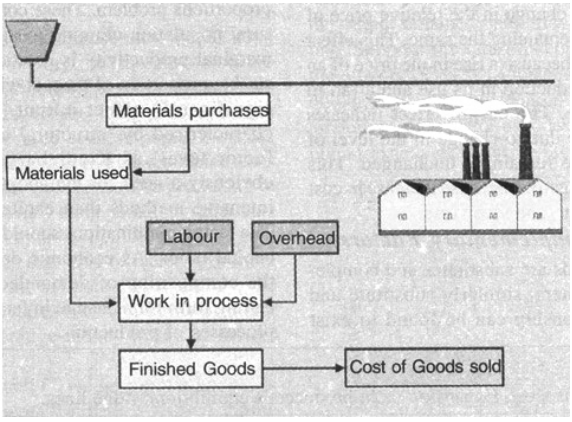

Fig. 7.1. Costs arise in the production process.

7.2. Nominal and Real Cost

Money Cost

The cost may be nominal cost or real cost. Nominal cost is the money cost of production. It is also called expenses of production. These expenses are important from the point of view of the producer. He must make sure that the price of the

product, in the long-run, covers these expenses including normal profit; otherwise he cannot afford to carry on the business.

Real Cost

Notes

Attempts have been made to "pierce the monetary veil" and to establish cost on a real basis. The real cost of production has been variously interpreted. Adam Smith regarded pains and sacrifices of labour as real cost. Marshall includes under it "real cost of efforts of various qualities" and "real cost of waiting." This is called the social cost by Marshall.

From the point of view of the community, as a whole, the money costs do not tell the whole story. It is the real cost which is more important.

Money Cost and the Real Cost do not Coincide

It is very seldom that the real cost of a commodity may be equal to the money cost. As Marshall puts it, "If the purchasing power of money in terms of effort remained about constant, and if the rate of remuneration for waiting has remained about constant, then the money measure of costs corresponds to real costs; but such a correspondence is never to be assumed lightly."

Thus, there is very little connection between money costs and real costs. The two can never be equal in a world of change, as our world is, whether we consider the long period or the short period. The value of land depends on scarcity. The question of cost in terms of effort and sacrifice in this case does not arise. The earnings of cinema stars, professors, sweepers, peasants, businessmen; etc. seldom correspond to the respective efforts and sacrifices undergone by each class.

Opportunity Cost

The Austrian school of economists and their followers gave a new concept of real costs. According to them, the real cost of production of a given commodity is the next best alternative sacrificed in order to obtain that commodity. It is also called opportunity cost or displacement cost.

Economic Cost

By economic costs is meant those payments which must be received by resource owners in order to ensure that they will continue to supply them in the process of production. This definition is based on the fact that resources are scarce and they have alternative uses. To use them in one process is to deny their use in other processes. Economic cost includes normal profit.

Implicit and Explicit Costs

Costs of production have also been classified as explicit and implicit costs. Implicit costs are costs of self-owned and self-employed resources such as salary of the proprietor or return on the entrepreneur's own investment. These costs are frequently ignored in calculating the expenses of production.

Explicit costs are the paid-out costs, i.e., payments made for productive resources purchased or hired by the firm. They consist of the salaries and wages paid to the employees, prices of raw and semi-finished materials, overhead costs and

payments into depreciation and sinking fund accounts. These are a firm's accounting expenses.

If we add to the money expenses two items, viz. alternative or opportunity costs and normal profits, we get the full costs of a firm as distinguished from business costs which are synonymous with a firm's total money expenses as computed by ordinary accounting methods. The entrepreneur must be sure of normal profit if he is to continue in business. In this sense normal profit too is a cost.

Notes

7.3. Alternative, Opportunity or Transfer Costs

In modern economic analysis, the term real cost is interpreted in the sense of opportunity cost or transfer cost. The American economist Davenport explains this concept as follows: "Suppose, for example, that a child has been given both a pear and a peach, that some predatory boy tries to seize them and that the only method of saving either is to drop one, say the pear, in the wayside weeds, and to run for shelter with the peach while the aggressor is picking up the pear. What has the peach cost? True, the peach was a gift. In a certain sense, therefore, it costs nothing. Nevertheless it is retained only on terms of foregoing the pear. The term cost seems not quite satisfactory to cover the case. Perhaps displacement would be preferable. Or, if one offers you choice between a ride and an evening at the theatre, it is awkward to say that the acceptance of one is at the cost of the other. Yet the resistance of taking one is the letting go of the other. Or, if with a dollar which you have earned you have a choice between buying a book, or a pocket knife, and finally buy the book, the resistance overcome is best expressed, not by the labour devoted to the earning of the dollar, and not by the dollar itself, but by the alternative application of the dollar. The highest cost of the book—the best test or measure of its worth to you was in the significance of its strongest competitor, the knife."

Since productive resources are limited, the production of one commodity can only be at the expense of another. The commodity that is sacrificed is the real cost of the commodity that is produced. In the words of Henderson, "Real cost of anything is the curtailment of the supply of other useful things, which the production of that particular thing entails. Economists define costs of production of a particular product as the value of the foregone alternative products that resources used in its production could have produced. The costs of resources to a firm are their values in their best alternative uses."

Suppose with a sum of ₹ 1000 a manufacturer can produce two radio sets or a small refrigerator. Suppose further that he decides to produce the refrigerator rather than the radio sets. In this case, the real cost of the refrigerator is equal to the cost of two radio sets, i.e., the alternative foregone. Conceived on these lines, cost of production means not the effort and sacrifices undergone, but the most attractive alternative foregone or the next best choice sacrificed. Real costs are thus not entities, ultimate and independent of utility, but they are sacrifices of competing demands.

In a money economy, it is "the amount of money necessary to induce the factors of production to be devoted to this particular task rather than to seek employment elsewhere."

Notes

Significance of Opportunity Cost

There are competing demands (depending upon the marginal utility of the consumers) for the same resources. Since the resources are scarce, certain demands are satisfied only by the sacrifice of other demands. The resources tend to move from those uses in which their demand price (marginal utility to the consumers in the aggregate) is lower to those in which it is higher until they tend to be distributed in various uses (for the production of various commodities and services) in such a way as to equalize their marginal utilities in the various uses.

It is thus the demand price or marginal utility which determines how much of a particular factor of production will be utilized for the production of a particular commodity. The supply of a commodity, therefore, ultimately depends upon the attraction offered by the demand price (or marginal utility) to the relevant factors of production. If this demand price is not high enough, these factors will be used for the production of commodities the demand price for which is high enough to attract them.

Thus, the cost of production of a commodity is fundamentally the sum-total of retention prices that have to be paid to the productive services for retaining them in a particular industry, and this must at least be equal to what they can command elsewhere.

Application of Opportunity Cost Doctrine

The opportunity cost doctrine has a wide application in the field of economic theory. It applies to the determination of values both internally and internationally. It also applies to income distribution.

Limitations: There are, however, some limitations in its application:

(*i*) *Specific:* It does not apply to productive services which are specific. A specific factor has no alternative use. Its transfer cost or opportunity cost is, therefore, zero. Hence, the payment made to this factor is of the nature of rent (preferably called non-cost outlays).

(*ii*) *Inertia:* Further, the doctrine of opportunity cost does not take into consideration the element 01 inertia. The factors may be reluctant to leave an occupation. In a case like this, where a factor's preference may have to be overcome, a payment exceeding the purely transfer cost will have to be made to induce it to an alternative occupation.

(*iii*) *Non-pecuniary considerations:* In view of these non-pecuniary considerations, the notion of objective costs must be given up. The theory of opportunity costs can be restated thus: "The cost of productive service X in making A is equal to the amount B that X could produce plus (or minus) the non-pecuniary returns (or cost) attached to producing B. It has been suggested that non-pecuniary returns should be converted into pecuniary returns to restore objectivity to the theory. But it is not always possible to find a common monetary denominator for the purpose.

(*iv*) *Factors not homogeneous:* Besides, it should be remembered that units of productive service are rarely homogeneous. This obstructs their transfer.

(*v*) *Wrong assumption:* Moreover, the theory is based on perfect competition which seldom exists.

(*vi*) Individual and social costs: Another discrepancy may arise on account of their difference in individual and social costs. A product may cost the factory owner 10 but to the society it will cost something in the form of ill-health due to the smoke that his factory emits.

Notes

Conclusion

Inspite of all these limitations and complications, the theory of cost, viz., theory of opportunity or alternative costs, is the most acceptable one at present. Certain features of this theory are worth noting:

(*i*) Cost of production of a commodity depends on demand prices of other commodities to the production of which the same productive service can contribute.

(*ii*) This cost analysis is not vitiated by the fact that a commodity is produced by the combination of several factors because marginal product of each factor can be ascertained.

7.4. Social Cost

It is the amount of cost the society bears due to industrialization. Industrialization has certain economic and social merits, but along with the merits, they bring about certain demerits also. They are like, development of slums, air-pollution, noise pollution, land pollution, social inequalities, and so on. The amount of cost the society bears due to industrialization is referred as social cost. Bhopal gas tragedy is one of the major examples of social cost. People suffer from certain diseases for which the government has to incur heavy expenditure on health care and research.

7.5. Entrepreneur's Cost

In what follows, we shall use the term 'cost of production' in the sense of money cost or expenses of production. This is entrepreneur's cost.

The entrepreneur's cost of production includes the following elements: (*i*) wages of labour; (*ii*) interest on capital; (*iii*) rent or royalties paid to the owners of land or other property used; (*iv*) cost of raw materials; (*v*) replacement and repairing charges of machinery; (*vi*) depreciation of capital goods; and (*vii*) profits of the manufacturer sufficient to induce him to carry on the production of the commodity.

Entrepreneur's costs may be classified as—(*i*) production costs, including material costs, wage costs, interest costs, etc., both direct and indirect costs; (*ii*) selling costs, including costs of advertising and salesmanship; (*iii*) managerial costs; and (*iv*) other costs, including insurance charges, rates, taxes, etc.

7.6. Short-Run and Long-Run Cost Curves

After discussing the concept of cost as used in economics, we are now in a position to study the nature of cost curves, both in the Short-Run and the Long-Run. The shape of the cost curve shows how a change in output affects the costs. There

will be a shift in the cost curve, if factors, other than a change in output, have affected the costs.

Meaning of Short-Run and Long-Run

Notes

Short-Run is a period of time within which the firm shows its output by varying only the amount of variable factors, such as labour and raw materials. In the Short-Run, fixed factors, such as capital equipment, top management personnel, etc., cannot be varied. In other words, in the Short-Run, the firm cannot build a new plant or abandon an old one. If the firm wants to increase production in the Short-Run, it can do so only by overworking the existing plant, by hiring more workers and buying more raw materials. It cannot increase its output in the Short-Run by enlarging the size of its existing plant or building a new plant of a larger size. The Short-Run is a period of time in which only variable factors can be varied, while fixed factors remain the same.

On the other hand, Long-Run is a period of time during which the quantities of all factors, variable as well as fixed, can be adjusted. Thus, in the Long-Run output can be increased by increasing capital equipment or by increasing the size of the existing plant or by building a new plant of a greater productive capacity.

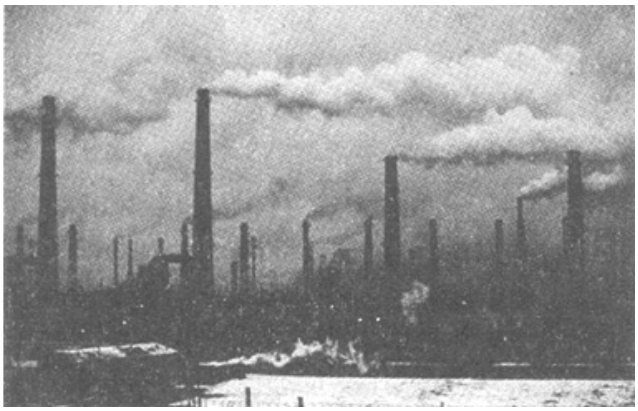

Fig. 7.2. Social cost due to air pollution.

Short-Run Fixed and Variable Costs

The cost of production for the entrepreneur may be analyzed from another point of view. Some costs vary more or less proportionately with the output, while others are fixed and do not vary with the output in the same way. The former are known as prime costs and the latter as supplementary costs of production or overhead costs.

The supplementary or fixed costs must be paid even though production has been stopped temporarily. They include rent of the factory building, interest on capital invested in machinery, and salaries of the permanently employed staff.

The prime costs, on the other hand, are variable costs. They vary with output. These costs include the cost of raw materials used in the making of the commodity as well as the costs of casual or daily labour employed. They are incurred only when the factory is operating.

The distinction between variable and fixed costs applies only to a short period. Nothing can remain fixed for a long time. In the long-run, the staff would change,

amount of capital invested would be different, the dimensions of the factory, too, may change, and so on.

Hence, in the very long run, all costs are variable.

Total Fixed Cost: Total cost is the sum of:

Notes

Table 7.1. Cost of production of a firm.

Units of output	Total fixed cost	Total variable cost	Total cost (2) + (3)	Average fixed cost (2) + (3)	Average variable cost (3) + (1)	Average variable cost (5) + (6)	Morginal cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0	30	0	30	–	–	–	–
1	30	10	40	30	10	40	10
2	30	18	48	15	9	4424	8
3	31	24	54	10	8	18	6
4	30	32	62	7.5	8	15.5	8
5	30	50	80	6	10	16	18
6	30	72	102	5	12	17	22

Fixed cost (factory land, building and machinery…..)

Plus the total variable cost (raw material charges, electricity…)

$$TC = TFC + TVC$$

$$\text{Total fixed cost} = \text{Total fixed cost} + \text{Total variable cost}$$

$$AFC = \frac{TFC}{Q}$$

$$\text{Average fixed cost} = \frac{\text{Total fixed cost}}{\text{Quantity}}$$

$$AVC = \frac{TFC}{Q}$$

$$\text{Average variable cost} = \frac{\text{Total variable cost}}{\text{Quantity}}$$

$$\text{Average cost} = \frac{\text{Total cost}}{\text{Quantity}} = \frac{TC}{Q}$$

Or

$$\text{Average cost} = \text{Average fixed cost} + \text{Average variable cost}$$

$$AC = AFC + AVC$$

$$\text{Marginal cost} = \frac{\text{Change in total cost}}{\text{Change in quantity}}$$

$$MC = \frac{C}{Q}$$

The total cost function is:

$$C = 15x - 6x - 2 + x^3$$

whereas 'x' is output and 'c' is total cost

1. Find out the following:

Notes

(a) Average cost function

$$\text{Average cost} = \frac{\text{Total cost}}{\text{Quantity}}$$

$$AC = \frac{TX}{x}$$

$$AC = \frac{15x - 6x^2 + x^3}{x} = 15 - 6x + x^2$$

(b) Minimum 'AC' or when is AC (Average cost) is minimum.

2. (i) For the 'AC' to be minimum, first derivation should be equal to zero, that means:

$$\frac{d}{dx}(AC) = 0$$

$$\frac{d}{dx}(15 - 6x - x^2) = 0$$

$$-6 + 2x = 0$$

$$2x = 6$$

$$x = 3$$

(ii) The second derivation of 'AC' should be greater than zero

$$\frac{d}{dx}(f) = -6 + 2x > 0 + 2 > 0$$

Hence, the condition is satisfied, where x = 3 'AC' is minimum

(c) What is minimum 'AC'

substitute in 'AC' = $15 - 6x + x^2$, the value of $x = 3$

$$15 - 6 \times 3 + (3)^2$$

$$15 - 18 + 9$$

$$24 - 18 = 6$$

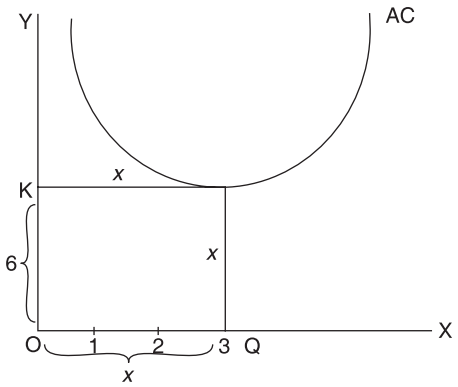

Fig. 7.3. Average cost is the cost per unit of output the AC is a 'U' shaped curve.

(d) Marginal cost function

Marginal cost function is obtained by taking the derivation of the total cost function.

$$TC = 15x - 6x^2 + x^3$$

$$\frac{d}{dx}(TC) = 15x - 6x^2 + x^3$$

$$MC = 15 - 12x + 3x^2$$

(e) When is the marginal cost the minimum? for 'MC' to be minimum the first derivation of 'MC' should be equal to zero.

(*i*) $$\frac{d}{dx}(MC) = 15 - 12x + 3x^2$$

$$-12 + 6x = 0$$

$$6x = 12$$

$$x = 2$$

(*ii*) The second derivation of 'MC' should be greater than zero.

$$= -12 + 6x$$

$$(MC)\, f'' = -12 + 6x + 6 > 0$$

Thus the condition is satisfied.

(*iii*) How much is marginal cost?

$$15 - 12x + 3x^2$$

When $x = 2$, marginal cost is minimum

$$15 - 12x + 3x^2$$

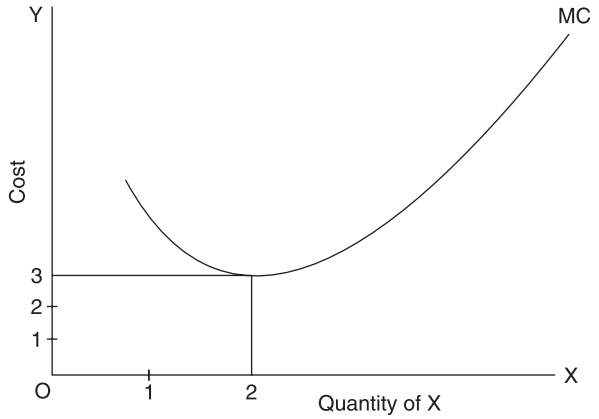

Fig. 7.4. Marginal cost curve is also U shaped.

It depicts the slope (1st derivative) of total cost curve.

Substitute $x = 2$

$$15 - 12 \times 2 + 3 \times (2)2$$

$$15 - 24 + 12$$

$$\therefore \quad 27 - 24 = 3$$

where $x = 2$, Marginal cost = 3, that is, the 'MC' is minimum.

(*f*) When are average cost and marginal cost equal? At the point of minimum 'AC' 'MC' cuts 'AC' and that is the point when AC = MC.

Notes

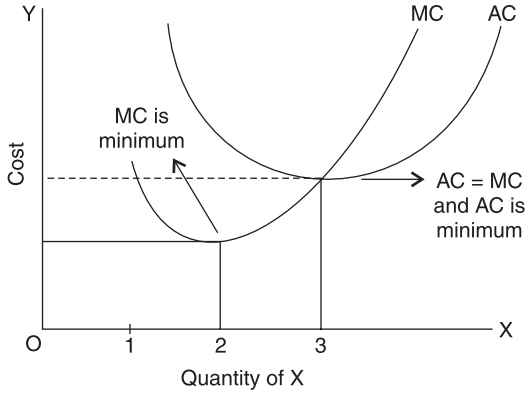

Fig. 7.5. Average and marginal cost.

When $x = 3$, AC is minimum, at the same point 'MC' is cutting 'AC', thus AC = MC when $x = 3$.

Short-run: Total, Average and Marginal Costs

Total cost of a given output is the sum of total fixed cost and total variable cost. As far as the total fixed cost is concerned, it remains constant for all units of output, but we have to incur more variable costs when output increases. Total variable cost is zero, when output is zero and it increases with an increase in output, though the rate of increase is not constant. At first it increases rapidly but, then, due to economies of larger production, it does not increase as fast as before, thought it jumps up rapidly at a later stage (when output increases from 4 units to 5 units) due to diseconomies that set in.

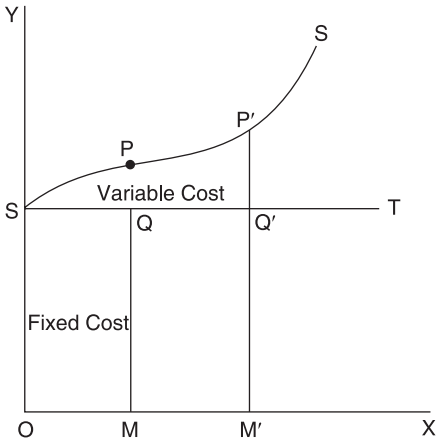

Fig. 7.6. Total cost: fixed and variable in the short seen.

In Fig. 7.6 SS is the total cost curve. It includes the total fixed cost (the distance between the curve ST and X-axis) and the total variable cost (represented by the distances between the curves SS and ST).

Average cost per unit is the total cost divided by the number of units produced. It is the sum of average fixed cost and the average variable cost. In Fig. 7.7, we have drawn both the average fixed cost curve and the average variable cost curve. The total fixed cost being fixed for all units of output, average fixed cost is a falling curve in the

shape of a rectangular hyperbola. Average variable cost curve (AVC) at first falls and then rises, as there emerge the diseconomies of large production.

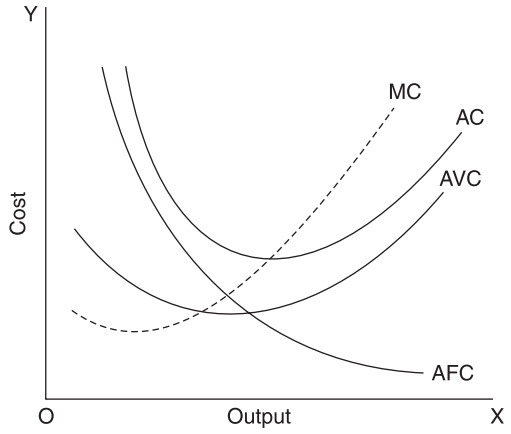

Fig. 7.7. Average and marginal cost in the short seen.

By adding the two costs, average fixed and average variable, we get the average cost (AC) per unit of output. At first, the average cost is high due to large\fixed cost and small output. As output increases, the fixed cost is thinly spread over the larger number of units produced, and the average cost accordingly falls. This is due to the various internal economies and the fuller use of indivisible factors. But when diminishing returns set in due to difficulties of management and limitations of plants and space, the variable costs, and therefore, the average costs, start increasing. The lower end of the curve turns up and gives it a V-shape. That is why average cost curves are y-shaped.

Marginal cost is the addition to total cost caused by a small increment in output. Marginal cost may be defined as the change in total cost resulting from the unit change in the quantity produced. Thus, it can be expressed by the formula:

$$MC = \frac{\text{Change in Q}}{\text{Change in TC}}$$

Marginal cost curve (MC) in Fig. 7.7 also falls at first due to more efficient use of variable factors as output increases and then it slopes upward as further additions to the output interfere with the most efficient use of the variable factors.

Relation between Marginal and Average Costs: It can be seen that average variable cost continues to decline so long as the marginal cost is below it but it starts rising at the point where MC crosses AVC. The marginal cost will always rise more sharply than the average variable cost. Similar relation holds between marginal cost and average cost.

Total Marginal Cost Relationship: When total cost is increasing at an increasing rate, its corresponding marginal cost is rising; when total cost is increasing at a decreasing rate, its corresponding marginal cost is falling; and when total cost has reached the maximum, i.e., it is increasing at a zero rate, its corresponding marginal cost is zero.

It will be seen that when marginal cost is less than average cost, average cost is falling, and when marginal cost is greater than average cost, average cost is rising.

Notes

Notes

This marginal-average relationship is a matter of mathematical truism and can be illustrated by a simple example.

Suppose that a cricket player's batting average is 50. If in the next innings, he scores less than 50, say 44. His average will fall because his marginal (additional) score is less than his average score; if in the next innings he scores more than 50, say 58, his average will rise because marginal score is greater than his average score. If with the present average as 50, in the next innings, he scores just 50, then his average and marginal scores will be equal and his average score will neither rise nor fall.

In the same way, let us suppose that the average cost of a producer is ₹ 15. If by producing another unit. his average cost falls, the additional (marginal) unit must have cost him less than ₹ 15. If the production of the additional unit raises his average cost, the marginal unit must have cost him more than ₹ 15. And, finally, if his average cost remains unchanged, the marginal unit must have cost him exactly ₹ 15. In other words, in the third case, his marginal and average costs are equal.

In Fig. 7.8, a represents average cost and M represents marginal cost. It is clear from this figure that when marginal cost is above (greater than) average cost, average cost rises. It is as if marginal cost were pulling average cost up towards itself. Similarly, when marginal cost is below the average cost, average cost falls as if the marginal cost were pulling the average cost downwards. When marginal cost is the same as the average cost, average cost remains constant as if marginal cost were pulling average cost along horizontally.

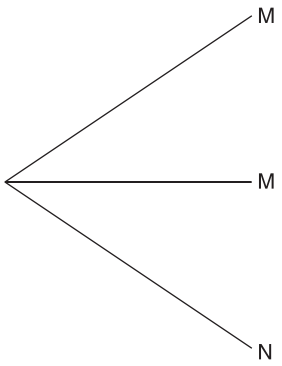

Fig. 7.8. Average and marginal relationship.

We can see in Fig. 7.8 that so long as marginal cost curve lies below the average cost curve, the latter is falling, and where marginal cost curve lies above the average cost curve, the average cost curve is rising. Therefore, at the point of intersection, where marginal cost equals average cost, average cost curve has just ceased to fall but has not yet begun to rise. This, by definition, is the minimum point on the average cost curve.

It must be carefully understood that we cannot deduce about the direction in which marginal cost is moving from the way average cost is changing, that is, we cannot make any generalization about whether marginal cost will be rising or falling when average cost is rising or falling. If average cost curve is falling, marginal cost must be below it but it (MC curve) may itself be rising or falling. If average cost curve is rising, marginal cost curve must be above it, but it (MC curve) may itself be rising or falling. This can also be easily understood with the example of batting average.

Suppose that a player's batting average is 60. In his next innings he scores 54, his average score will fall to 57. But his present marginal score of 54 may well be greater than his previous marginal score. He might, for instance, have had a 'duck' in his previous innings so that his marginal score has risen considerably. But as long as average score is falling, marginal score whether rising or falling will be less than average score.

Notes

Deriving Marginal and Average Cost Curves from total Cost Curve: In Fig. 7.9, SS is the total cost curve. To get the average and marginal cost for a given point P on the total cost curve, we proceed as follows:

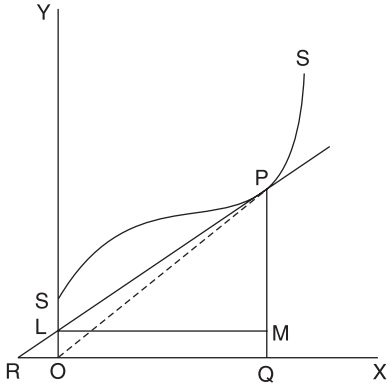

Fig. 7.9. Derivation of AC and MC curves from the total cost curves.

Draw a straight line from P to the origin O. Then average cost at the point P equals the value of tangent of the angle (POX) that the straight line makes with the X-axis. In this figure, it is equal to PQ/OQ. Similarly, we can know the corresponding average costs at different points of the total cost curve. By joining all these points we get a V-shaped average cost curve (AC in Fig. 7.10).

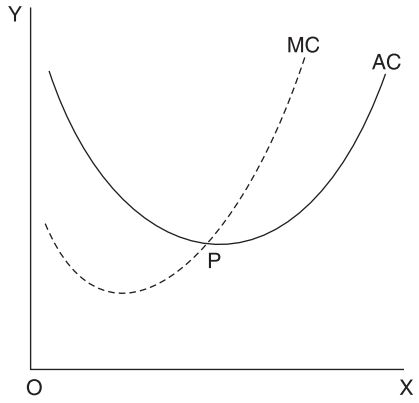

Fig. 7.10. MC and AC curves.

To know the marginal cost at the point P, we draw a tangent to the curve SS at the point P:

Then the marginal cost corresponding to the total cost at P is given by the value of the tangent of the angle that RP makes with the X-axis. In this case, it is equal to the value of the tangent of angle PRQ and this equals PQIRQ or which is the same thing as PM/LM.

Similarly, we can know the marginal cost at different points of the total cost curve and by joining them, we get the marginal cost curve (MC in Fig. 7.10).

Long-Run Average Cost Curve

Notes

The Long-Run average cost curves will normally be V-shaped just as Short-Run cost curves are, but they will always be flatter than the Short-Run ones. The longer the period to which the curve relates, the less pronounced will be the V-shape of the cost curves. By the long period, we mean the period during which the size and organization of the firm can be altered to meet changed conditions.

Why LAC Curves are Flatter: The simple explanation of why the Long-Run average cost curve is flatter than the Short-Run cost curve may be given in terms of fixed and variable costs. It should be obvious that longer the period at the disposal of the producer, the fewer costs will be fixed and more costs will be variable. Over a long period of time, there are very few costs which are just as great if output is small as they are if it is large. Over a long period, the size of the plant can be changed, unwanted buildings can be sold or let, and administrative and marketing staff can be decreased or increased in order to deal efficiently with smaller or larger outputs and sales.

Thus, total fixed cost can be varied to a considerable extent over long periods, whereas in the short-run its amount is fixed absolutely. In other words, the longer the period under consideration, the fewer costs are 'fixed' and more costs become 'variable'.

In the short-run, a reduction in output will raise average costs because fixed costs will work out at a higher amount per unit of output. In the long period, however, the fixed costs can be reduced somewhat if output continues at a low level. Average fixed cost will, therefore, be lower in the long than in the short-run.

Variable costs will not rise as sharply in the long-run as they do in the short-run. In the longrun, the size of the firm can be increased to deal with an increased output more satisfactorily and the management can better tackle the various problems of larger output.

Thus, in the long-run, average costs will be lower and the variable costs will not rise as sharply as in the short period. Hence, LAC cost curves are flatter than the short-run ones.

A more adequate explanation of the flatter long-run average cost curves may be given in terms of greater divisibility of the factors of production in the long-run. In the long-run, the indivisible factors of production (like the plant, building, elaborate marketing organization) can be used more economically because in the long-run, they are, in fact, to some extend divisible. In the short-run, the shape of the cost curve of the firm depends on the action of the law of variable proportions, with capital and management as fixed (indivisible) factors. In the long-run, the cost curve of the firm depends on what are called the "returns to scale". In the long-run, the amount of capital can be altered and the management can be arranged differently, if necessary. They are no longer completely indivisible.

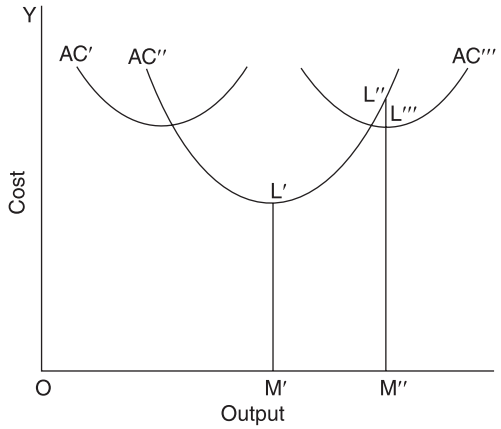

Fig. 7.11. Change the scale of operation.

If all the factors of production can be used in varying proportions, it means that the scale of operations of the firm can be changed. Each time the scale of operations is changed, a new short-run cost curve will have to be drawn for the firm. The accompanying figure will bring this out. To begin with, let us suppose that the firm has the short-run cost curve AC″. In that case, the optimum output will be OM′ at the lowest average cost M′ L′. Now if output is desired to be increased to OM″, in the short-run, it can be obtained at the average cost M″ L″ along the short turn cost curve AC″, because in the short-run the 'scale' of operations is fixed. But, in the long-run, a new and bigger plant can be built on which OM″ is the optimum output. That is, the firm now has the short-run average cost curve AC‴, and that by increasing the scale of its operations, the firm can produce the output OM″ at a cost of M″ L‴ instead of M″ L″.

Thus, it will have been seen that, at any given scale of operations, the firm will encounter regions of rising and falling costs, while in the long-run the firm can produce on a completely different cost curve to the left or the right of the original one. For each different scale, there will be an output where average cost is at a minimum.

At this output, the firm is said to be producing at its technical 'optimum', given its scale of operations. Output is 'optimum' in the sense that average cost is at a minimum. Therefore, in the long-run, the firm will be able to adjust its scale of operations so that it produces any given output at the lowest cost.

Look at the diagram. If the firm in question wishes to produce output OM′ it will find it best to produce at that scale which has the average cost curve SAC′. If OM″ quantity is desired, it will be best to produce on the curve SAC″, and for output OM‴ on the curve SAC‴. In each case, it will be producing the desired output at the lowest possible cost. It should, of course, be clearly understood that only in the long run can the scale of operations be altered; in the short-run it will be fixed, and the average cost of output above or below the optimum level will necessarily rise along the short-run curve in question, whether it be SAC′ or SAC″ or SAC‴. A long-run average cost curve can, therefore, be drawn and it will show what the long-run cost of producing each output would be.

The shape of the long-run average cost curve will depend on the assumptions made. One assumption relates to the prices of factors. In the above examples, we have assumed constant factor prices. Various assumptions are, however, possible

Notes

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about the divisibility of factors of production. The simplest case is to assume that all factors are infinitely divisible and that there are no economies to be reaped from, for example, the division of labour. In other words, in the long run, all factors can be adjusted so that the proportions between them are the optimum ones and production can take place at the lowest point on the relevant short-run average cost curve. As will be seen from the (Fig. 7.12), on this assumption the long-run cost curve of the firm LAC, is a horizontal straight line.

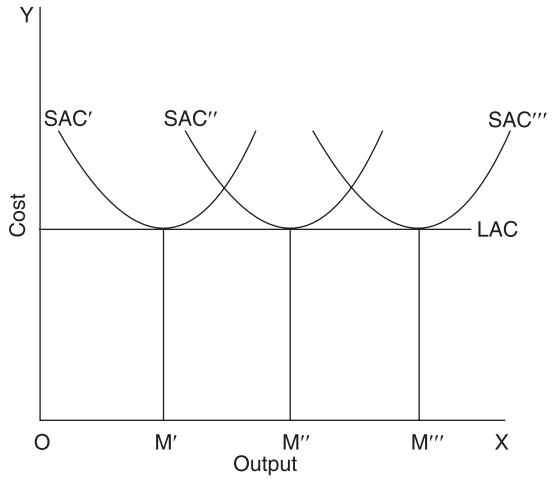

Fig. 7.12. Horizontal LAC curve with constant factor prices and divisible factors.

But this is not a realistic assumption. It is very unlikely that all factors are infinitely divisible even in the long-run. And as output is increased, the firm may reasonably expect to reap some economies from the division of labour that will become more and more practicable as the scale of operations becomes larger.

It is a common observation that some factors of production are indivisible. In particular, management is likely to be incompletely divisible. It is mere commonsense that an entrepreneur will be unlikely to produce twice a given output as efficiently as he produces a given output. It is, therefore, reasonable to expect that, even in the long-run, firms will produce more cheaply at some scales of output than at others, if for no other reason, at least because, beyond a certain point, management becomes more difficult and less efficient. Certain combinations of factors will thus produce at lower costs per unit than others. This means that, in the more probable conditions, the short-run average cost curves of the firm will have different minimum points.

In the figure given below, it will be seen that the short-run average cost curve SAC_2 has a lower minimum point than either the curves SAC. The optimum output of the firm is obtained at point M. The long-run average cost curve, which is a tangent to all the short-run curves, will be the curve LAC. It will, therefore, be U-shaped itself. But, as will be obvious from Fig. 7.13, it will be flatter than the short-run cost curves, the U-shape will be less pronounced.

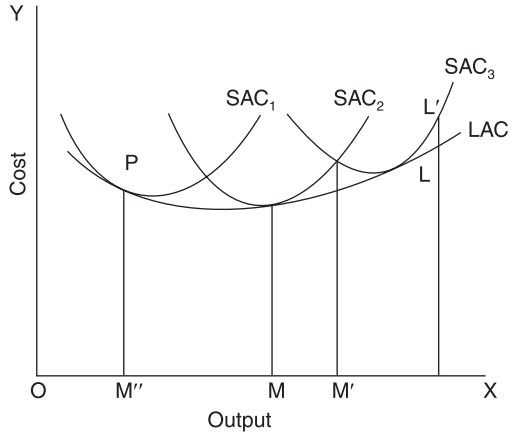

Fig. 7.13. LAC curve: An envelope of SAC's.

Economists generally call this curve as 'envelope', since it envelops all the short-run curves. It is also called the "planning curve" of a firm.

From the LAC curve it should be clear that for any given output, average cost cannot be higher in the long-run than in the short-run. After all, any adjustment in production which may be expected to cut costs, and which may be possible to make in the short-run, must also be feasible in the long-run. On the other hand, in the short-run, it is not always possible to produce a" given output in the cheapest possible way. If a different output is to be produced, it is impossible to change the amounts used of all factors of production in the short-run. While in the long-run all possible adjustments can be made.

The conclusion, therefore, follows that at no point can the long-run average cost curve lie above a short-run average cost curve or the long-run average cost curve can never cut a short-run average cost curve, though they may be tangential to each other.

Long-Run Marginal Cost Curve

In the diagram, we have drawn long-run marginal cost curve LMC from short-run average cost and marginal cost curves and long-run average cost curve. Just as every point of the continuous long-run average cost curve corresponds to some point of a short-run average cost curve, similarly every point of the continuous long-run marginal cost curve corresponds to some point on a short-run marginal cost curve.

If the output to be produced is OA, then in the long-run it must be produced on point P on the short run average cost curve SAC, and the long-run average cost curve LAC, because only point P minimizes the cost for output SAC,. OA. Corresponding to point P on SAC, and LAC, there is a point R on the short-run marginal cost curve SMC. Then AR is the relevant short-run marginal cost for output OA in the long-run. Therefore, the point R must lie on the long-run marginal cost curve corresponding to output OA.

If the output OB is to be produced, then in the long-run it will be. produced on point L on the short run average cost curve SAC_2 and long-run average cost curve LAC, L is also the point on the short-run marginal cost curve SMC_2 corresponding to output OB. Therefore, point L must also lie on the long-run marginal cost curve corresponding to output OB.

Notes

Similarly, if output OC is to be produced, then in the long-run it must be produced on point K of the short-run average cost curve SAC_3. Corresponding to K on SAC_3, the relevant point on the SMC3 is H. Therefore, H must also lie on the long-run marginal cost curve corresponding to output OC.

By joining points such as R, L and H, we get long-run marginal cost curve LMC. The long-run marginal cost curve, like the long-run average cost curve, is U-shaped.

It is clear from Fig. 7.14 that the long-run marginal cost curve is flatter than the short-run marginal cost curves. This is what one would expect, because the U-shape of the long-run average cost curve is less pronounced than that of the short-run average cost curves. The relationship between the long-run marginal cost curve and long-run average cost curve is the same as that between shortrun marginal cost curve and short-run average cost curve. That is, when the long-run marginal cost curve lies below long-run average cost curve, the latter is falling and when the LMC curve lies above LAC curve, the latter is rising. The long-run marginal cost curve cuts the long-run average cost at the latter's lowest point. This is so because long-run marginal cost is equal to the long-run average cost when the latter is neither rising nor falling.

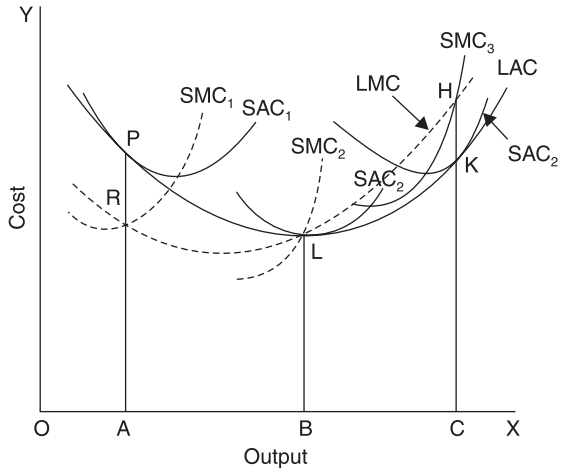

Fig. 7.14. Derivation of long-run marginal cost curve.

Why LAC Curve First Falls and then Rises? That the LAC curve slopes downwards as the scale of production is enlarged is due to the various economies of scale, e.g., (*i*) larger scope of specialization of labour, (*ii*) increasing use of specialized machinery, (*iii*) other technological improvements. The LAC curve rises after a point because of the various diseconomies of scale, e,g., rising cost of the inputs and the difficulty of management, etc.

Optimum Plant: The plant is said to be of the optimum size which is operated at the point of its minimum average cost of production. It is the minimum point of whose short-run average cost curve coincides with the minimum point of the long-run average cost curve. In Fig. 7.4, plant SAC_2 is operated at its minimum cost of production for producing OB output. It is being used to its full capacity to turn over an optimum output. Any size of the plant which is either bigger or smaller than SAC_2 will be producing at higher average cost.

Optimum Output: In Fig. 7.14, OB is the optimum output. It is optimum because it is the least cost output. If the output is smaller (e.g., OA) or larger (e.g., OC), it will be obtained at a higher cost of production as compared with OB output.

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Optimum Firm: The firm which produces optimum output (i.e., the least cost output) with the optimum plant is called the Optimum Firm. The firm producing OB output by operating SAC_2 plant is said to have achieved the optimum size. Since the minimum cost point of SAC_2 coincides with the minimum point of the long-run average cost curve, the optimum firm can also be defined as the firm which produces at the minimum point of the long-run average cost curve (LAC). The size of the optimum firm is different in different industries. For instance, it is smaller in agriculture and other industries like mining, whereas it is bigger in manufacturing industries like automobile industry.

L-Shaped Long-Run Average Cost Curve

We have said that the long-run average cost curves are V-shaped. But empirical studies have shown that the LAC curves are L-shaped, rather than V-shaped. It is found that there is a rather rapid downward slope in the early part of the curve, i.e., in the initial stages of production.

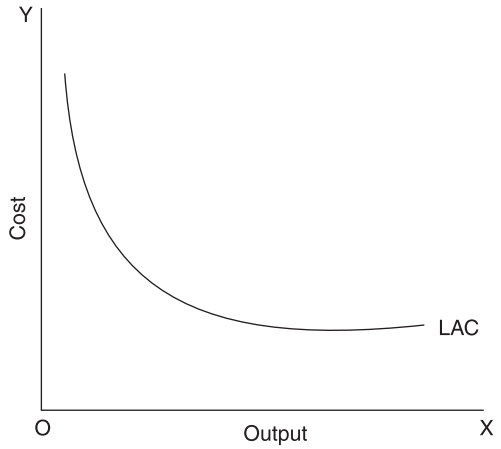

Fig. 7.15. 'L' shaped LAC.

The following reasons are given in support of this view:

(*a*) Rapid technical progress brings about a sharp decline in unit cost. At first, the unit cost is high and remains quite high for an initial scale of production. But then the unit cost takes a downward course and remains constant so that the LAC curve is flat at the right, making the curve L-shaped. This is due to technical progress.

The figure explains that, in the absence of technical progress, the long-run average cost curve is V-shaped, technical progress would convert it into an L-shaped curve. Initially, in the figure given in Fig. 7.15, the output is OMI and the unit cost is OC and the relevant long-run average cost curve is LAC_1 but when the output is expanded in response to increased demand to M_2, the cost of production per unit is OC_1 on the curve LAC_1, which is quite high. But if technical progress is going apace, it may be possible to produce the same output at a unit cost of OC_2 on the curve LAC_2; this cost is much lower since a more modern plant has been installed due to technical progress. With further expansion of the output to OM_3 and technical progress gathering momentum, the unit cost drops further to

Notes

OC_3 on the long run average cost curve LAC_3. It is thus that the long-run average cost curve LAC takes L-shape.

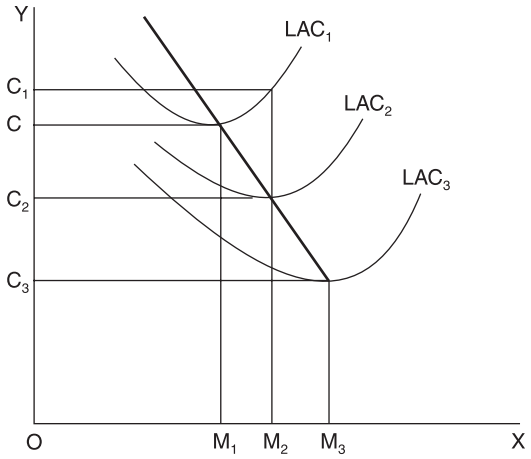

Fig. 7.16. LAC falls with technical progress.

(*b*) The second reason why the long-run average cost curves slope downwards is 'learning' to produce at lower cost. The cost does not merely depend on how much is produced in a given period but also on the aggregate output since the time the firm commenced operations. As the aggregate output increases and longer the period that has elapsed, efficiency of the firm improves and costs are lowered. Hence, although the short-run average cost curve must be U-shaped, the long-run cost curves may be U-shaped or L-shaped.

Empirical Cost Curves

Most of the cost curves that are discussed in the text books of economics are theoretical or conventional and they are U-shaped. But there are some cost curves of different shapes which are found in the real world. They are called empirical cost curves.

Dish-Shaped Curve

An attempt has been made to reconcile the theoretical and empirical approaches. The U-shaped cost curves apply to cases where the plant is indivisible but can be used with changing quantities of variable factors. In such cases, change in output results through a change in variable factors when the returns are non-proportionate giving rise to U-shaped cost curves. But in the case of a fairly divisible and flexible plant, the cost curves may be horizontal over a range of output. When a plant is divisible it is possible to maintain the factor proportion so that all the factors have to be increased in the same proportion as the increase in the output. The result is that the costs are constant. Under these circumstances the cost curves will be dish-shaped. You will notice that at first both AC and MC fall, and then they remain constant for a wide range of output and then rise forming a sort of dish.

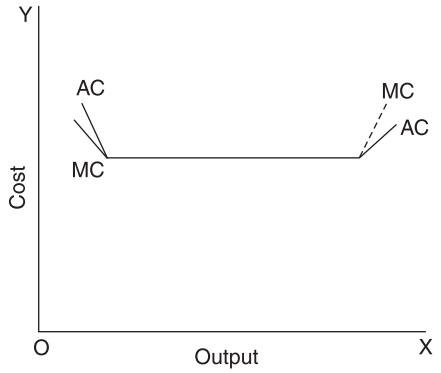

Fig. 7.17. Dish shaped AC and MC.

The U-shaped curve of the traditional theory was questioned by economists both on theoretical and empirical grounds. For instance, George Stigler suggested that the short-run average variable cost curve has a flat stretch over a range of output so that the long-run cost curve is L-shaped rather than U-shaped. It has been argued that managerial diseconomies can be avoided by improved methods of modern management.

Inverse J Cost Curves

More recently, the economists have questioned even the L-shaped cost curve. It has been said that there are economies of scale at all levels of output, although their magnitude becomes small beyond a certain scale of output. Hence, we get cost curves of the shape of an inverse J as shown in Fig. 7.18.

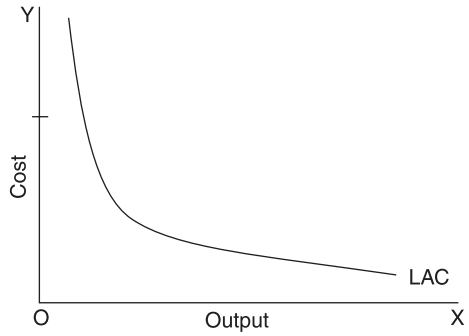

Fig. 7.18. Inverse 'J' cost curve.

7.7. Summary

- The cost of production of an individual firm operating in a market has an important influence on the market supply of a commodity.
- The cost may be nominal cost or real cost. Nominal cost is the money cost of production. It is also called expenses of production.
- Total cost of a given output is the sum of total fixed cost and total variable cost. As far as the total fixed cost is concerned, it remains constant for all units of output, but we have to incur more variable costs when output increases. Total variable cost is zero, when output is zero and it increases with an increase in output, though the rate of increase is not constant.

- The Long-Run average cost curves will normally be V-shaped just as Short-Run cost curves are, but they will always be flatter than the Short-Run ones. The longer the period to which the curve relates, the less pronounced will be the V-shape of the cost curves.

Notes

7.8. Review Questions

1. What is meant by the equilibrium of a firm and of the industry? Indicate the conditions of equilibrium of both under perfect competition.
2. Distinguish between AC and MC and discuss the significance of this distinction in the analysis of firm's equilibrium.

Unit–8

Supply Analysis

Notes

Structure

8.1. Introduction
8.2. Law of Supply
8.3. Elasticity of Supply
8.4. Supply Function
8.5. Summary
8.6. Review Questions

8.1. Introduction

Supply means the amount offered for sale at a given price. "We may define supply as a schedule of the amount of goods that would be offered for sale at all possible prices at anyone instant of time, or during anyone period of time, for example, a day, a week and so on, in which the conditions of supply remain the same." **(Meyers)**

Supply should be carefully distinguished from stock. Stock is the total volume of a commodity which can be brought into the market for sale at a short notice and supply means the quantity which is actually brought in the market. For perishable commodities, like fish and fruits, supply and stock are the same because whatever is in stock must be disposed. The commodities, which are not perishable, can be held back, if prices are not favourable. If the price is high, larger quantities are offered by the sellers from their stock. And if the price is low, only small quantities are brought out for sale. In short, stock is potential supply.

8.2. Law of Supply

Supply has functional relationship with price: "Other things remaining the same, as the price of a commodity rises its supply is extended, and as the price falls its supply is contracted." The quantity offered for sale varies directly with price, i.e., the higher the price the larger is the supply, and *vice versa*.

Corresponding to the demand schedule already explained, we can construct an individual's supply schedule. Also, depending on the amount supplied at various prices by all the sellers in a market, we can obtain the supply schedule of the market. Supply schedule represents the relation between prices and the quantities that people are willing to produce and sell.

It will be seen that when price is as high as ₹ 7 per dozen as many as 43 dozen apples are offered for sale. As the price falls, the amount supplied decreases. When the price is as low as ₹ 1 a dozen, only 10 dozen apples are offered for sale. This

means that as price falls supply is contracted, and as price rises supply is extended. This is the Law of Supply.

Suppose the following is the (market) supply schedule of apples:

Notes

Price per dozen (₹)	Quantity supplied (in dozens)
7	43
6	40
5	36
4	31
3	25
2	18
1	10

The supply schedule given above can be represented in the form of a Supply Curve (Fig. 8.1 given below):

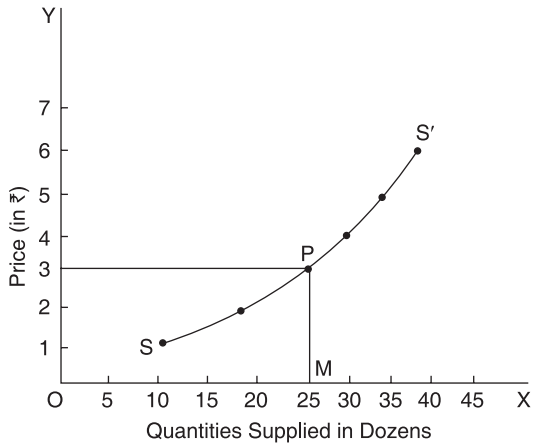

Fig. 8.1. Supply curve shows positive relationship between price of the commodity and quantity supplied.

In this diagram, quantities supplied are measured along OX, and prices along OY, SS′ is the supply curve. If from any point P on the supply curve, PM is drawn perpendicular to OX and PO′ to OY, then at PM (= O′ O) price, PO′ (= OM) quantity will be supplied.

It should be noted that the supply curve slopes downwards from right to left, as contrasted with the demand curve, which slopes from left to right. The reason is that as price falls demand is extended, but supply is contracted; and, conversely, as price rises demand is contracted, but supply is extended.

If the price falls too much, supply may dry up altogether. The price below which the seller will refuse to sell is called the reserve price. At this price, the seller buys his own stock, as it were.

8.3. Elasticity of Supply

Notes

When a small fall in price leads to great contraction in supply, the supply is comparatively elastic. But when a big fall in price leads to a very small contraction in supply, the supply is said to be comparatively inelastic. Conversely, a small rise in price leading to a big extension in supply shows elastic supply, and a big rise in price leading to a small extension in supply indicates inelastic supply.

The elasticity of supply is really the measure of the ease with which an industry can be expanded and of the behaviour of the marginal costs. If a slight increase in price is followed by the entry of many new firms having minimum average cost equal to price and the cost does not rise, the supply is said to be perfectly elastic. In case, however, the increased output can be obtained only by an infinite increase in price and no new firm is attracted to the industry, the supply will be inelastic. In between these two extremes, there will be different degrees of elasticity. The degree of elasticity will depend, in a particular case, on the slope of the marginal cost curve and the shape of the average cost curves of the successive firms.

The relation between price and the quantity supplied is rather like the relation between a whistle and a dog—the louder the whistle, the faster comes the dog; raise the price and the quantity supplied increases. If the dog is responsive, in economic terminology elastic, quite a small crescendo in the whistle will send him bounding along. If the dog is unresponsive or 'inelastic', we may have to whistle very loudly before he comes along at all.

Different Types of Elasticity of Supply

Elasticity of supply when $Zs = 0$

This means there is no change in quantity supplied due to change in price.

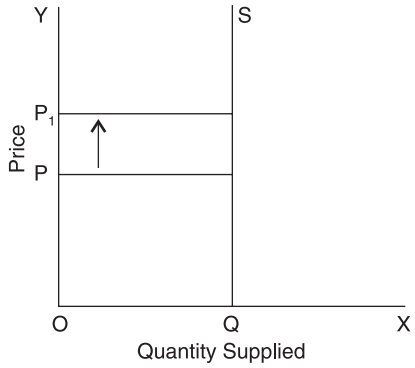

Fig. 8.2. Vertical supply curve imphes zero elasticity.

This is when quantity supplied remains same even after price increases or decreases, then it is said to be perfect inelasticity of supply.

In the above diagram price increased from 'OP' to 'OP_1' but the quality remained unchanged.

(*i*) When elasticity of supply is infinite or $\Sigma s = \infty$.

$$\Sigma s = \frac{\Delta S}{\Delta P}$$

Notes

$$= \frac{QQ_1}{O}$$

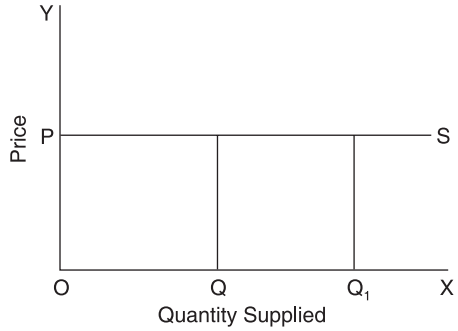

Fig. 8.3. Perfectly elastic supply.

(Numerator is changing and denominator is zero it is equal to ∞)

$$\Sigma s = \infty$$

In other words there is no change in price but there is change in quantity supplied. This is known as 'perfectly elastic supply'.

(*ii*) Elasticity of supply when $\Sigma s = 1$.

$$\Sigma s = \frac{\Delta S}{\Delta P}$$

$$= \frac{QQ_1}{PP_1}$$

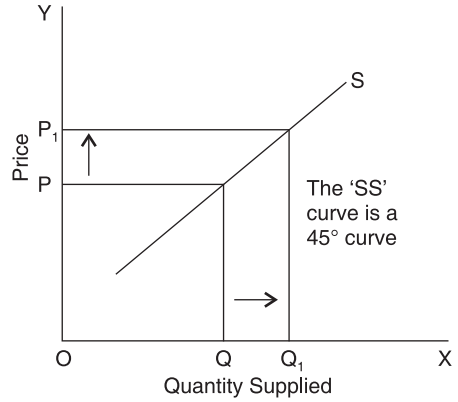

Fig. 8.4. Unitary elastic supply.

where $PP_1 = QQ_1$, this means, the amount of change in price is equal to the amount of change in quantity supplied. This is known as "Unit elastic supply".

(*iii*) Relatively inelastic supply $\Sigma s < 1$

$$\Sigma s = \frac{\Delta S}{\Delta P} = \frac{QQ_1}{PP_1}, \text{ where } PP_1 > QQ_1$$

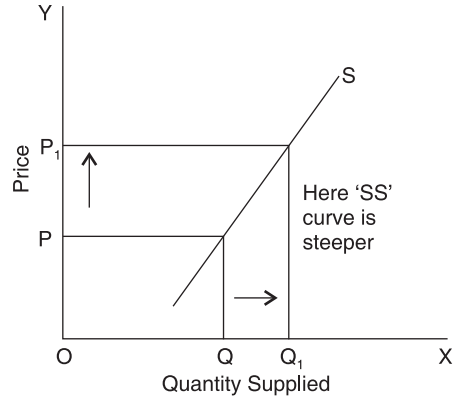

Fig. 8.5. Inelastic supply.

In the above diagram the change in price is greater than the change in quantity supplied, that means the price is changing more but the quantity supplied is relatively less. Hence, this is referred as relatively inelastic supply.

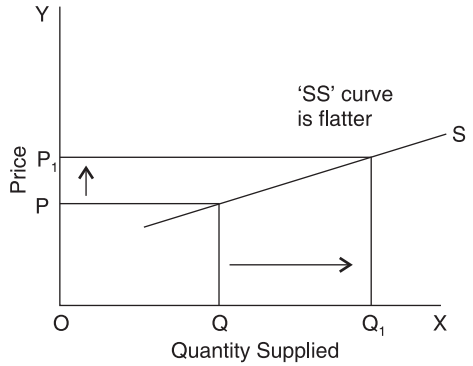

Fig. 8.6. Elastic supply.

Extension of Supply and Increase in Supply

The difference between extension of supply and increase in supply can be shown through examples and diagrams. Extension of supply refers to a situation when more quantity is supplied at a higher price. This is shown in the example as follows:

Example 1.

Price (₹)	Quantity (Units)
20	30
30	10

It would be seen here that as the price of the commodity rises from ₹ 20 to ₹ 30, the quantity supplied rises from 4 units to 10 units. In this situation, there will be upward movement from A to B along the supply curve SS, as shown in Fig. 8.7.

An increase in supply refers to a situation when the producer is willing to supply a larger quantity at the same price because of change in factors other than the price of the commodity. In this situation, there will be rightward shift in the supply curve.

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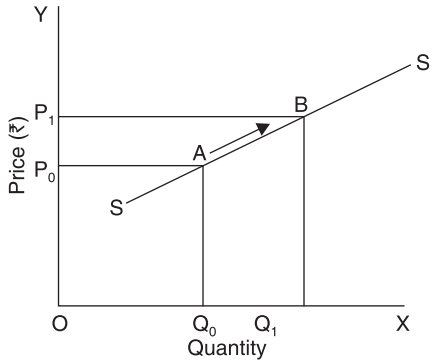

Fig. 8.7. Extension of supply.

Example 2.

Price (₹)	Quantity (Units)
20	4
30	6

It would be seen here that at a price of ₹ 20, 4 units of the commodity are supplied initially. But as a result of change in factors other than the price of the commodity, 6 units of the commodity are supplied at the same price of ₹ 20. This is illustrated in Fig. 8.8 by movement from A on S to B on S_1. This rightward shift of supply curve from S to S_1 shows increases in supply.

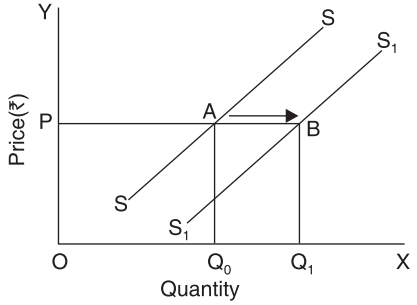

Fig. 8.8. Increase in supply.

Contraction of Supply and Decrease in Supply

The difference between contraction of supply and decrease in supply can also be illustrated through example, and diagrams. Contraction of supply refers to a situation when a smaller quantity is supplied at a lower price. This is shown in example 3 and Fig. 8.9 as follows:

Example 3.

Price (₹)	Quantity (Units)
20	4
10	2

It would be seen here that as the price of the commodity falls from ₹ 20 to

₹ 10, the quantity supplied falls from 4 units to 2 units. In this situation, there will be downward movement from A to B along the supply curve SS as shown in Fig. 8.9.

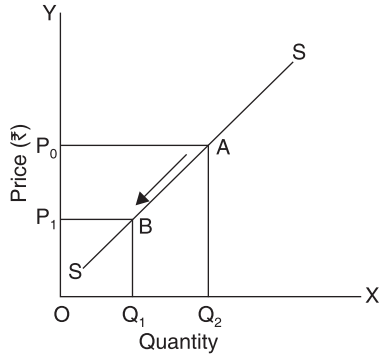

Fig. 8.9. Contraction of supply.

A decrease in supply refers to a situation when the producer is willing to supply a smaller quantity at the same price because of change in factors other than the own price of the commodity. In this situation, there will be leftward shift in the supply curve. This is explained in example 4 and Fig. 7.10.

Example 4.

Price (₹)	Quantity (Units)
20	4
20	3

It would be seen here that at a price of ₹ 20, 4 units of the commodity are supplied initially. But as a result of change in factors other than the price of the commodity, 3 units of the commodity are supplied at the same price of ₹ 20. This is illustrated in Fig. 8.10 by movement from A on supply curve SS to B on supply curve S_1S_1. This leftward shift from supply curve S to supply curve S_1 shows decrease in supply.

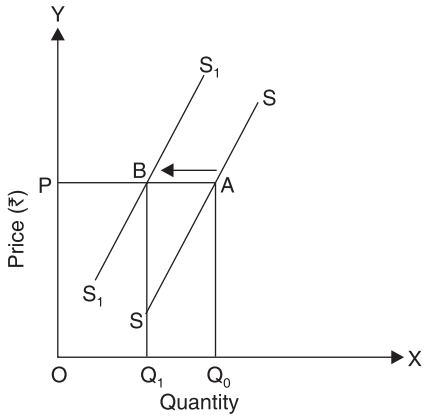

Fig. 8.10. Decrease in supply.

We may sum up the distinction between change in quantity supplied and change in supply as follows:

Notes

Extension of Supply		Increase in Supply	
1.	It refers to a larger quantity being supplied at a higher price.	1.	It refers to a larger amount being supplied at the same price.
2.	It is due to a rise in the price of the commodity.	2.	It results from changes in factors other than the price of the commodity.
3.	It involves an upward movement along the same supply curve.	3.	It leads to a rightward shift of the supply curve.

Contraction of Supply		Decrease in Supply	
1.	It means a fall in the amount supplied due to a fall in the price of the commodity.	1.	It means a smaller amount being supplied at the same price.
2.	It is due to a fall in the price of the commodity.	2.	It results from changes in factors other than the price of the commodity.
3.	It involves a downward movement along the same supply curve.	3.	It leads to a leftward shift of the supply curve.

Causes of Change in Supply

The increase and decrease in supply may take place on account of a number of factors:

(*i*) Cost of production of a commodity may rise due to increase in the costs of the various factors of production (or resource prices) like raw materials and intermediate products, used in its production. This will result in a decrease in supply. Conversely, a fall in the prices of such factors will lead to greater production and consequently an increase in supply.

(*ii*) As regards agricultural commodities, better rainfall, improvement in irrigation, bigger doses of fertilizers, improved seeds and better methods of production naturally would increase supply. On the contrary, failure of rains, floods, fires, dust-stones, pests earthquakes, etc., will decrease the supply. Food supply recently increased in India owing to larger production brought about by the 'Green Revolution' and larger supply of agricultural inputs like fertilizers, water supply, pesticides, credit, etc.

(*iii*) Improvement in technique lowers cost of production and increases supply. On the other hand, higher taxation imposed on the output of a commodity or on the factors required for its production will decrease the supply.

(*iv*) Improvement in the means of communication and transport may increase the supply of a particular commodity if imports from foreign countries are encouraged. It may, however, reduce the supply if exports are facilitated.

(*v*) Political disturbances or a war may disorganize or divert channels of trade and thus create scarcity of certain kinds of goods.

(*vi*) Supply may be consciously decreased by agreement among the producers, e.g., agreement among the oil producing countries to cut back production. Also, a part of the supply may be destroyed in order to raise prices. During the Great Depression the production of rubber, tea and some other

commodities was restricted through international agreements among the producers. Coffee was thrown into the sea in Brazil.

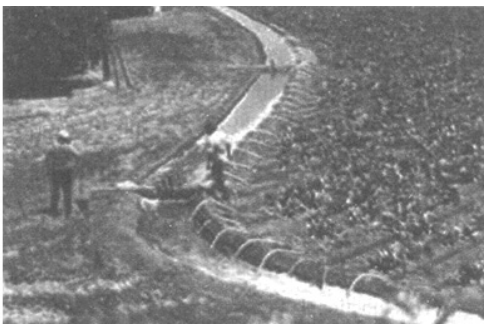

Fig. 8.11. Imigation increases agricultural production and supply.

(*vii*) The supply of goods is also determined by the goals set by the producing firms for themselves. They can decide to produce more or less of a commodity or stop the production of one and undertake that of another.

(*viii*) The supply of a commodity also depends on the price of that commodity and the prices of other commodities. Higher the price, greater is the supply that will come forth. If the prices of other goods are more attractive, then the production of these commodities will be stimulated relatively to a particular commodity.

(*ix*) The supply also depends on the number of sellers. Entry of more sellers will increase the supply and their exit will decrease the supply.

(*x*) Sellers price expectations. If the sellers fear that the prices will fall in the future, they will hasten to unload the supply now and the supply will increase. On the other hand, expectation of rise in future will induce them to withhold supply and the supply will contract.

(*xi*) Taxation of output, sales, imports, etc., also affects the supply. By levying high import duties, a government may restrict the supply of a foreign commodity to encourage its production at home; Government may also restrict production of certain articles for reasons of health (e.g., opium in India).

Conclusion

Thus, changes in prices, supply of inputs, production techniques, monopoly control, and taxation are some of the factors which bring about changes in supply.

8.4. Supply Function

So far we have discussed the changes in supply in response to certain factors in simple, non-technical terms. We give below practically the same thing in technical terms.

The behaviour of the suppliers of goods follows a general and consistent pattern as they react to some identifiable set of functional supply determinants. Thus, the supply function identifies the immediate determinants of supply for all goods. In

Notes

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other words, they explain variations in the quantity of goods supplied. This supply function can be put as under:

$$Qx = F(Px, Py, Pi, T, MT)$$

The supply function is merely a mathematical notation which reads as follows: The quantity supplied of any good Qx varies with the prices of that good Px, the price of their goods Py, the price of factor inputs Pi, technology T and time periods MT. We analyze below these separate functional relationships.

Supply as a Function of Price

This functional relationship can be put in the form of an equation $Qx = F(Px)$. This means that the quantity supplied of good X varies directly with its price. That is if the price of X goes up, its supply would increase, and vice versa. In other words the quantity supplied changes in the same direction as the price of the good concerned. That is, there is a direct functional relationship between a change in the price of a good and change in its quantity supplied. It leads to the law of upward sloping supply. However, direct relationship between price and quantity supplied is consistent but it is not irrefutable since there is some exception. Some factors other than mere change in price may determine the supply of a commodity e.g., change in tastes, weather, fashion, etc.

Supply as a Function of Price of other Goods

Albert O. Hirschman discusses in his book it economic interdependence as it governs the supply of goods. According to him interdependent relationship in supply can be of two types: horizontal and vertical. There is horizontal relationship between goods when they are used at the same stage of production e.g., at the consumption or factor input level. In this case, the two goods compete with each other for the purchaser's choice. Consequently, there will be a unique, pecuniary linkage relationship between the two that is essentially a demand cross elasticity relationship.

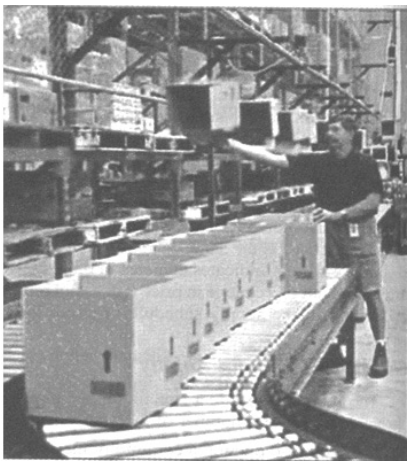

Fig. 8.12. Supply of goods.

But in the case of vertical relationship one good is an input for the production of another. A good has a forward linkage relationship when it is used as a factor input for another, but the good produced has a backward linkage relationship. Whatever the

case may be, there is an important functional relationship between the price of one good and the supply of another.

When the relationship is horizontal, it is almost always an inverse relationship. That is, if the price of one good rises, the demand for the other good will increase. The coefficient of cross elasticity is negative. On the other hand, when the resource transferability is low as between production of say wheat and cars, coefficient of cross elasticity is low or zero.

Notes

In the case of forward vertical relationship, an increase in the price of the final product will induce a rise in the price of the factor input. The coefficient of cross elasticity will then be positive. The strength of relationship and the size of the coefficient will depend upon the extent to which one good is uniquely an input for another.

Supply as a Function of the Price of Inputs

The functional relationship between the supply of a good and the price of its factor inputs is a backward vertical relationship that is always negative. This means that as the price of factor inputs increases, the cost of production must go up which results in decrease in supply reflecting increased relative scarcity of the good. The size of the coefficient of cross elasticity for each of the several factor inputs will depend on their relative importance in the production of goods.

Supply as a Function of Technology

It is obvious that technology is the most important determinant of the supply of goods. Applied technology reflects the entrepreneur's talent to make use of scientific discovery, invention and engineering advances in the production process. Technological advancement results in the production of new goods, new efficiency levels in production, the development of the new industries and better resource distribution within industries.

8.5. Summary

- d
- ?
- ?
- ?
- ?

8.6. Review Questions

1. Explain the law of supply. What are its limitations?
2. With the help of diagrams explain the elasticity of supply. How it can be measured at various points on a supply curve?
3. Explain increase and decrease in supply. Give the causes of change in supply.
4. What is supply function? Explain the determinants of supply.

Unit–9

Market and Market Structures

Notes

Structure

9.1. Introduction
9.2. Market
9.3. Market Forms or Market Structures
9.4. Criteria for Classification of Market
9.5. Summary
9.6. Review Questions

9.1. Introduction

The father of economics Adam Smith in his book 'The Theory of Moral Sentiments' (1759), wrote about the main characteristics of human beings. According to him a human being is very selfish or posseses self-love as well as there exists an invisible hand. The concept of self-love in human being is one of the most important factor in "the value theory" as well as in the development of market.

A human being weighs between what he pays and what he receives "in return". This is one of the basic characteristic of a human being. Generally a human being carries out economic activities till a point where he thinks that what I am paying is equal to what I am receiving. A human being willingly trades or carries out an exchange till he feels that what I am giving is less and what I am receiving is more, once he realizes that what I am giving is equal to what I am receiving, he stops further trade.

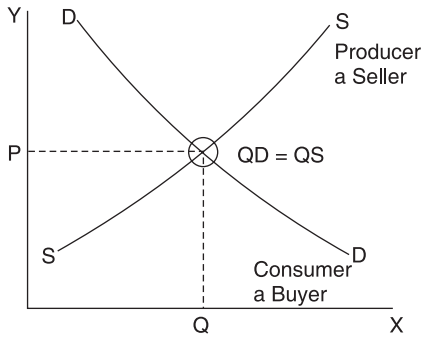

Fig. 9.1. Buyer and seller create market.

This is one of the basic philosophy of consumers, and the same thing in Marshallian words can be referred as consumer's surplus. On the other hand producer can be referred as producer surplus. Both the concepts are based on the selfish motives of maximizing returns in terms of their efforts (or money).

'DD' demand curve is derived from the consumer's behaviour in relation to price. A consumer (demand curve) is interested in paying least and wants more in return at the point of price he feels that what he is giving. Buyer and seller create marketing is equal to what he is receiving. On the other hand a seller or producer (supply curve) is interested in getting the maximum price by giving less and less, at point 'P' he feels that what I am giving is equal to what I am receiving. Price is determined at a place where 'DD' and 'SS' are equal. This is the concept referred as 'market'. On the basis of this 'market' the whole free enterprise or capitalistic economy is based. Market plays a very important role in determining the shape, size and extent of the economy of a country. In value theory the,

(*a*) Classical value theory is based an supply side concept (cost of production of a good).

(*b*) Neo-classical, is based on demand side concept (utility of a good) and

(*c*) Modern-economic theorists take into account both the supply side and demand side economics that is nothing but the concept of market. (In other words demand and supply determines price).

9.2. Market

Meaning of Market

"Originally", says Jevons, "a market was a public place in a town where provisions and other objects were exposed for sale; but the word has been generalized so as to mean any body of persons who are in intimate business relations and carry on extensive transactions in any commodity. A great city may contain as many markets as there are important branches of trade, and these markets may not be localized, but the idea of locality is not necessary. The traders may be spread over a whole town, or region, or a country and yet form a market if they are, by means of fairs, meetings, published price lists, the post-office or otherwise, in close communication with each other."

Fig. 9.2. A marketplace.

In the words of Cornet, a French economist, "Economists understand by the term market not any particular marketplace in which things are bought and sold but the whole of any region in which buyers and sellers are in such free intercourse with one another that the price of the same goods tends to equality easily and quickly."

Thus, the essentials of a market are: (*a*) a commodity which is dealt with; (*b*) the existence of buyers and sellers; (*c*) a place, be it a certain region, a country or the entire world; and (*d*) such intercourse between buyers and sellers that only one price should prevail, for the same commodity at the same time.

Notes

Classification of Markets

Markets may be classified:

(*a*) On the basis of area as local, national and world markets;

(*b*) On the basis of time, as market price on any particular day or moment, short-period price, long-period price, or secular markets covering a generation; and

(*c*) On the basis of nature of competition obtaining there in as perfect markets and imperfect markets.

Size of the Market

In the case of some commodities, the market is very wide covering the whole country or even the whole world, whereas in certain other cases, the size of the market is very limited covering a small village. The size of the market depends upon several factors:

Character of the Commodity: In order to have a wide market, a commodity must be (*i*) portable; (*ii*) durable; (*iii*) suitable for sampling, grading and exact description; and (*iv*) such as its supply can be increased. Such commodities are wheat, gold, government securities, etc. Bulky articles like bricks and perishable articles like fresh fruit and vegetables have a narrow market.

Nature of demand: Commodity, which is in universal demand (e.g., gold and silver), will have a wide market. Similarly, commodity of general consumption has a wide market.

Means of communication and transport: The size of the market depends upon the extent to which means of communication and transport have been developed. A properly developed transport and communication system has enabled commodities to be carried long distances and establish wide contacts. This has widened the markets.

Peace and security: Obviously, goods cannot be marketed in distant places unless peace and order prevail. In war-time, due to insecurity in war zones, markets get restricted. Thus, the extent of the market depends on the peace prevailing in the region.

Currency and credit system: If the currency and credit system of the country are well developed, marketing can be conveniently and profitably carried on over extensive areas. The extent of the market very largely depends on the state of the currency and the confidence it inspires.

Policy of the state: Markets may be restricted by the policy of the State. Prohibitive duties and quotas restrict the market. The zoning system (e.g., wheat zones) which allows free movement of goods only within a certain zone has the same effect. Thus, the Government policy can also affect the extent of the market.

Degree of division of labour: We know that division of labour is limited by the extent of the market. The converse of this is also true. That is, the extent of the market

also, in turn, depends upon the degree of division of labour. The greater the division of labour the cheaper the articles and wider the market.

Perfect and Imperfect Markets

Notes

A distinction is made between perfect market and imperfect market. "A market is said to be perfect when all the potential sellers and buyers are promptly aware of the prices at which transactions take place and all the offers made by other sellers and buyers, and when any buyer can purchase from any seller and conversely. Under such a condition, the price or a commodity will tend to be the same (after allowing for cost of transport including import duties) all over the market." Thus the prevalence of the same price for the same commodity at the same time is the essential characteristic of a perfect market.

On the other hand, a market is said to be imperfect when some buyers or sellers or both are not aware of the offers being made by others. Naturally, therefore, different prices come to prevail for the same commodity at the same time in an imperfect market. In a perfect market, on the other hand, the same price rules throughout the market.

Conditions of a Perfect Market: For a market to be perfect the following conditions are essential:

(*i*) *Free and perfect competition:* In a perfect market, there are no restrictions either on the buyers or on the sellers. They should be absolutely free to buy from or sell to anybody they like. In other words there should be no monopolies.

(*ii*) *Cheap and efficient transport and communication:* Same price for the commodity will not rule if the information about changes in prices cannot be quickly transmitted or if the commodity cannot be cheaply and speedily transported. Hence, efficient transport and communication system is essential for a perfect market.

(*iii*) *Wide extent:* A perfect market is sometimes considered synonymous with a wide market. We have already discussed above the extent on which the extent of the market depends. In order to have a wide market, a commodity should be portable, durable, and gradable and should have a wide demand.

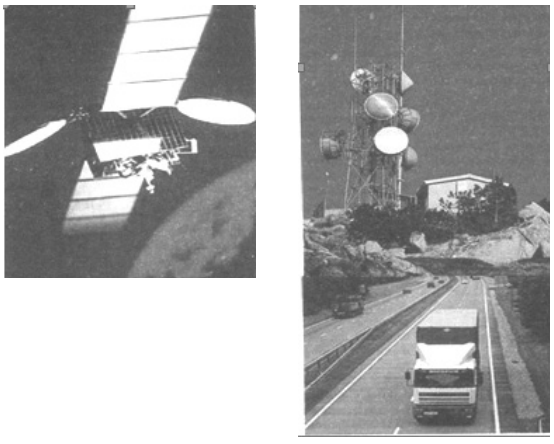

Fig. 9.3. Transport and communication.

Notes

Let us now examine some cases and find out whether the markets are perfect or imperfect.

Market for invested capital (stocks and shares) is the nearest approach to a perfect market, since the stock exchange market is highly organized.

Market for precious metals, first-class bills of exchange, foreign currencies and important raw materials are also efficiently organized and may be regarded as perfect.

Markets for consumers' goods, which are retail markets, are less perfect. Retail prices differ appreciably in different localities.

Producers' goods are, as a rule, purchased wholesale; the markets for such goods are more perfect.

Labour market is mostly imperfect. This is due to the comparative immobility of labour, their weak bargaining power and the ignorance that generally prevails in labour circles.

The market for real estate is relatively perfect. Owing to big amounts involved the buyers' take a lot of trouble before they make a purchase.

In the money market, the rate of interest varies according to the risk of default and the period of the loan. Hence, money market may be regarded as imperfect. It is especially so in India.

9.3. Market Forms or Market Structures

The type of market depends on the degree of competition prevailing in the market. Broadly speaking, there are two types of competition prevailing in the markets: (*i*) Perfect competition, and (*ii*) Imperfect competition.

Perfect competition and pure competition: Modern economists draw a distinction between perfect competition and pure competition. Perfect competition is a wider concept. In order that there should be perfect competition, the market should satisfy not only the conditions of pure competition but also a few more.

Imperfect competition may also take several forms, e.g., monopolistic competition, oligopoly, duopoly or monopoly.

Thus, at one extreme stands perfect competition and at the other monopoly: In between these two extremes, there are all degrees of competition or lack of competition.

The following Table 9.1 shows at a glance different types of market forms on the basis of the nature of competition.

Table 9.1. Different types of market forms.

Use of the market	No. of firms	Nature of the Commodity
	A. Perfect Competition	
Perfect or pure competition	Infinite	Homogeneous
	B. Imperfect Competition	
(*a*) Monopolistic Competition	Many	Differentiated
(*b*) Perfect Oligopoly	A few	Homogeneous

(*c*) Imperfect Oligopoly	A few	Differentiated
	C. Pure or Absolute Monopoly	
Pure or Absolute Monopoly	One	Homogeneous

Now we shall study these forms in some detail. We take first pure and perfect competition.

Notes

Pure Competition

Pure competition is said to exist when the following conditions are fulfilled:

(*i*) *Large number of buyers and sellers:* One condition of pure competition is that there should be operating in the market a large number of buyers and sellers. If that is so, no single seller or purchaser will be able to influence the market price, because the output of any single firm is only a small proportion of the total output and of the total demand. Hence, market price has to be taken as given and unalterable by every purchaser and seller. Thus, no individual purchaser can influence the market price by varying his own demand and no single firm is in a position to affect the market price by varying its own output. "Thus the market price is a parameter to be reacted to rather than a variable to be determined."

(*ii*) *Homogeneous product:* The second condition is that the commodity produced by all firms should be standardized or identical. In case all firms produce Kalyan-S wheat.

It is immaterial for the purchaser as to who has produced it. He can buy it as well from the other. This condition ensures that the same price rules in the market for the same commodity. The product of each firm is a perfect substitute for the products of all other firms in the industry.

It is the purchaser's opinion which will determine whether the products are identical or not. Even if the products are really identical, the purchaser may have a prejudice against the output of a particular firm and may consider it different. Hence, under pure competition, the consumers do not differentiate between the products of different firms.

When the quality is the same, the commodities are perfect substitutes for one another and their cross elasticity is infinity. In these circumstances, if a firm raises its price, it will lose all the customers. It can sell as much as it likes at the prevailing price. Why should it then think of lowering its price? Hence, a firm cannot raise its price nor need to lower it. That is why the prevailing market price is accepted and acted upon by all the dealers.

If the above two conditions, viz., homogeneous product and large number of buyers and sellers, are found in a market, it is said to be under pure competition.

Shape of Demand Curve in Pure Competition: When there is pure competition, the average revenue curve (AR) or demand curve of a firm is a horizontal straight line which means that any firm can sell any quantity at the prevailing price. Since the number of firms is very large, no individual firm has the power to vary the market price. Also, since the products are identical from the consumer's point of view, the price paid by them cannot be different. This is represented by the following Fig. 9.4.

OX and OY are the two axes. Along OX is represented the output and along OY the Price/Revenue. At OP price, a seller can sell as much as he likes. He cannot charge more and he will not charge less. If he raises the price, he will lose all his customers and if he charges less, he will be unnecessarily losing.

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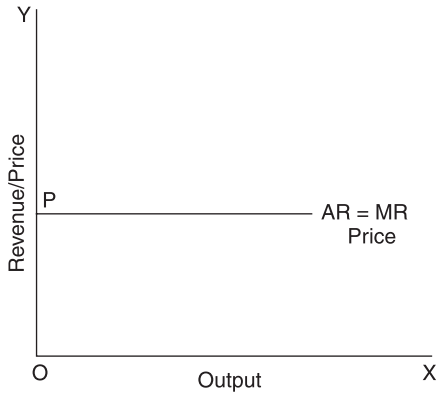

Fig. 9.4. Average revenue curve or sales curve of a firm under perfect competition.

Examples of pure competition are to be found in the case of farm products, e.g., wheat, cotton, rice, etc. In this case, there is a large number of producers, each producing an insignificant portion of the total market supply. In other fields, we seldom come across' pure competition.

Perfect Competition: Conditions

There is said to be perfect competition when every purchaser and seller is so small relative to the entire market that he cannot influence the market price by increasing or decreasing his purchases or his output.

Perfect competition is a wider term than pure competition. Besides, the two conditions of pure competition mentioned above, viz., the homogeneity of the product and the existence of a large number of dealers, several other conditions must also be fulfilled to make it a perfect competition.

Thus, the conditions of perfect competition are :

(*i*) Large number of buyers and sellers.

(*ii*) Homogeneous product.

(*iii*) *Free entry or exit:* There should be no restrictions, legal or otherwise, on the firms' entry into, or exit from, the industry. In this situation all the firms will be making just normal profit. If the profit is more than normal, new firms will enter and extra profit will be competed away; and if, on the other hand, profit is less than normal, some firms will quit, raising the profits for the remaining firms. But if there are restrictions on the entry of new firms, the existing firms may continue to enjoy supernormal profit. Only when there are no restrictions on entry or exit, the firms will earn normal profit.

(*iv*) *Perfect knowledge:* Another assumption of perfect competition is that the purchasers and sellers should be fully aware of the prices that are being offered and accepted. In case there is ignorance among the dealers, the same price cannot rule in the market for the same commodity. When the

producers and the customers have full knowledge of the prevailing price, nobody will offer more and none will accept less, and the same price will rule throughout the market. The producers can sell at that price as much as they like and the buyers also can buy as much as they like.

(*v*) *Absence of transport costs:* If the same price is to rule in a market, it is necessary that no cost of transport has to be incurred. If the cost of transport is there, the prices must differ to that extent in different sectors of the market.

(*vi*) Perfect mobility of the factors of production: The mobility is essential in order to enable the firms to adjust their supply to demand. If the demand exceeds supply, additional factors will move into the industry and in the opposite case, move out. Mobility of the factors of production is essential to enable the firms and the industry to achieve an equilibrium position.

Mrs. Robinson thus defines perfect competition: "When the number of firms being large, so that a change in the output of any of them has a negligible effect upon the total output of the commodity, the commodity is perfectly homogeneous in the sense that the buyers are alike in respect of their preferences (or indifference) between one firm and its rivals, then competition is perfect, and the elasticity of demand for the individual firm is infinite."

Here is a comprehensive definition: "Perfect competition is the name given to an industry or to a market characterized by a large number of buyers and sellers all engaged in the purchase and sale of a homogeneous commodity, with perfect knowledge, of market prices and quantities, no discrimination and perfect mobility of resources."

Chamberlain thus brings the distinction between pure competition and perfect competitions: "Purity requires only the absence of monopoly, which is realized when there are many buyers and sellers of the same (perfectly standardized) product. Perfection is concerned with other matters as well: mobility of resources, perfect knowledge, etc. Perfection is a different thing from its purity, meaning by the latter its freedom from monopoly elements."

Imperfect Competition

Imperfect competition takes three main forms :

(*a*) Monopolistic competition,

(*b*) Oligopoly, and

(*c*) Monopoly.

We shall briefly describe below these forms of imperfect competition.

Monopolistic Competition: The main features of monopolistic competition are as under:

(*i*) Under monopolistic competition, the number of dealers is not large; at any rate not so large as under perfect competition.

(*ii*) The products are not homogeneous; they are, on the other hand, differentiated, inter alia, by means of different labels attached to them such as different brands of toilet requisites.

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(*iii*) Either in ignorance or on account of transport costs or lack of mobility of the factors of production, same price does not rule in the market throughout. Rather different prices are charged by different producers for products which are really similar, but are made to appear different through advertisement, high pressure salesmanship and labeling and branding. The result is that each producer comes to have a hold on a clientele from whom he can charge higher prices.

(*iv*) Under monopolistic competition, the demand curve or sales curve or what is also called average revenue (AR) curve, is not a horizontal straight line. It is, on the other hand, a downward sloping curve. This means that the seller can sell more by reducing price, whereas under perfect competition, he need not reduce the price for he can sell any amount at prevailing price. Under monopolistic competition, the producer can charge higher prices, because his customers are attached to him.

The seller can thus have a price policy of his own, whereas a seller under perfect competition has no price policy; he has merely to accept the market price.

(*v*) Thus, under monopolistic competition, the demand for the product is not perfectly elastic; it is responsive to changes in price.

This form of market is a blend of the monopoly and competition and has been called monopolistic competition or 'competing monopolists' by Chamberlain, an American economist. In the real world, we have neither absolute monopoly (i.e., absence of competition) nor perfect competition, but monopolistic competition, i.e., partly monopoly and partly competition. The products are not complete substitutes for one another but they are close substitutes.

As mentioned already, monopolistic competition is only one form of imperfect competition where there is a fairly large number of sellers but products are differentiated. Other forms of imperfect competition are oligopoly and ordinary monopoly.

Oligopoly: When in a market, there are only a few sellers of a product, it is called oligopoly. The basic characteristic of an oligopolistic situation is the fact that every seller can exercise an important influence on the price output policies of his rivals. This is due to the fact that the number of sellers is not very large and each seller controls a substantial portion of the supply. Every seller, therefore, is so influential that his rivals cannot ignore the likely adverse effect on them of a given change in the price-output policy of any single manufacturer. This rival consciousness, or the recognition on the part of the seller of the fact of interdependence, is the most important feature of oligopolistic situations.

Oligopoly differs from monopoly and monopolistic competition in the sense that, in monopoly, there is a single seller; in monopolistic competition, there is quite a large number of them; but in oligopoly, there is only a small number of sellers.

Oligopoly without product differentiation: Under oligopoly, the pricing theory is fundamentally the same as in other forms of competition with this difference that the larger the number of firms the greater will be differences in marginal costs and more remote will be the possibility of collusion or agreement whether tacit or explicit.

When they all deal in a standardized product and each is producing a considerable portion of the total output, the price and output policy of each producer is likely to affect the others appreciably, but none can predict precisely how. The price which will be fixed in oligopoly without product differentiation is thus indeterminate.

Oligopoly with product differentiation: In case there is product differentiation, monopoly agreements are even less likely. Since products are not similar, any producer in oligopoly can raise or lower his price without any fear of losing customers or immediate reactions from his rivals. Cut throat competition is unlikely. However, keen rivalry among them may create conditions of monopolistic competition. The price, in the long run, may settle at a level between the monopoly price and that in cut-throat competition.

Monopoly: When there is monopoly, a single producer or seller controls the entire market. There are no substitutes for his product. He controls the entire supply and he can fix the price. He is the firm and he also constitutes the industry. It is a one-firm industry. Thus, under monopoly, the distinction between the firm and industry disappears. The average revenue (AR) curve (or the demand curve) always slopes downwards to the right as in monopoly competition, but it is less elastic in monopoly than in monopolistic competition. In monopoly, there is no need to differentiate products because no close substitutes are available. It is one product, homogeneous and completely under the control of the monopolist.

Market Classifications and Cross Elasticity of Demand

Some economists (e.g., Tiffin) have used the concept of cross elasticity of demand for measuring the extent of competition among the firms. In this way, on the basis of the cross elasticity of demand an attempt has been made to classify the market structures. In other words, we can distinguish between the various types of market situations on the basis of cross elasticity of demand. Stonier and Hague observe in this connection, "In perfect competition, the cross elasticity of demand for the product of a single firm with respect to a change in the price of the rest of industry will be infinite. That is to say, the proportionate fall in the demand for the product of a single firm will be infinitely large compared with any given proportionate fall in the price of the product of the whole industry. Similarly, in monopolistic competition, the cross elasticity of demand for the product of a single firm with respect to a change in the price of the other products made in the monopolistic 'group' will be very high. The cross elasticity of demand for the product of a monopolist with respect to a fall in the price of other products in the economy will be very low." In other words, when the cross elasticity of demand is infinite, it is a case of perfect competition; when it is very high it is a case of monopolistic competition and when it is very low, it is a case of monopoly.

But cross elasticity of demand is a very unsatisfactory measure of the extent of competition prevailing in the market. It has been pointed out by some economists (e.g., Chamberlain) that cross elasticity of demand of any perfectly competitive firm is zero (and not infinity). As mentioned above, under monopoly also cross elasticity of demand is zero. Hence, on the basis of cross elasticity, the two market situations of pure competition and pure monopoly are lumped together whereas they are two opposite extreme cases. In a perfectly competitive situation, cross elasticity of demand

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is zero because a firm is producing a product that has so many identical substitutes produced by other firms. Hence if a purely competitive firm tries to raise its price, its product will be ousted by the homogeneous products of other firms.

Cross elasticity as a criterion for classification of markets is also criticized on the ground that it ignores "the two basic determinants of market structure: the degree of closeness or remoteness of substitution among products and the number of firms in the relevant group or industry."

Thus, we may conclude that cross elasticity of demand, as a criterion of market classification, is not satisfactory. The best way to classify markets is, therefore, on the basis of number of firms in the industry and the nature of the product (that is, closeness or remoteness of substitutability).

9.4. Criteria for Classification of Market

We have already given the classification of markets. The following criteria for the classification of markets have been suggested:

1. Substitutability of Products

This criterion refers to the existence and closeness of substitutes i.e., the extent and form of competition among the firms in the industry. This criterion may be measured by the conventional price crosselasticity (*ep*) for the products of any two firms (*i* & *j*)

$$Eq.ji = \frac{dpi.pi}{dpi.qj}$$

This formula measures the degree to which the sales of the firm are affected by the price charged by the firm in the industry. If the elasticity is high, the products of the two firms will be close substitutes. In the case of perfect substitutes (i.e. homogeneous products), the price cross-elasticity between every pair of producers approaches infinity. On the other hand, if the products are differentiated, but can be substituted for one another, the price cross-elasticity will be finite and positive. If products are not substitutes, their price cross-elasticity will tend to zero.

2. Inter-Dependence

This refers to the extent to which firms in the industry take into account the reactions of competitors. This criterion is related to the number of firms in the industry and the degree of differentiation of the products. If the number of firms is large, no firm will take into account the actions of the rivals and each firm will act accordingly. But if there are only a few firms in the industry, they will all be alert as to what rivals may be doing and mould their own policy accordingly.

The degree of interdependence of the firms will be measured by an unconventional quantity, cross-elasticity for the products of any two firms, thus will be:

$$Eq.ji = \frac{dpi.qi}{Dqj.pj}$$

This formula measures the proportionate change in the price of *j*th firm resulting from an infinitesimally small change in the quantity produced by the *i*th firm. The higher the value of this elasticity the stronger the interdependence of the firms. In case the number of the firms in the industry is large, each firm will tend to ignore

the reactions of the competitors whether the products are close substitutes or not. In a case like this, the quantity cross-elasticity between each pair of the producers will tend to be zero. But if the number of firms in the market is small e.g., oligopoly, there will be marked interdependence even when the products are differentiated. The quantity crosselasticity in this case will be finite.

In the case of a monopolist both elasticities will be zero, because there is only one firm in the industry and there are no close substitutes.

There is the third criterion viz the condition of entry i.e., whether new firms are free to gain entry into the industry without hindrance or not.

The 'condition of entry' has been defined by the expression:

$$E = \frac{Pa - Pc}{Pc}$$

Here E is the condition of entry, Pc is the price under pure competition and Pa is the price actually charged.

9.5. Summary

- d
- ?
- ?
- ?
- ?

9.6. Review Questions

1. Explain the concept of market. Give criteria for classification of market.
2. Explain the concept of equilibrium price.
3. Discuss the main features of following firms in short.
   (*i*) Perfect competition (*ii*) Monopoly
   (*iii*) Monopolistic competition (*iv*) Oligopoly.

Unit–10

Pricing

Notes

Structure

10.1. Introduction
10.2. Determinants of Price
10.3. Objectives of Pricing
10.4. Pricing Methods-In Practice
10.5. Pricing Under Different Market Structure
10.6. Price Discrimination
10.7. Summary
10.8. Review Questions

10.1. Introduction

Determination of prices is an important managerial function in all enterprises. Price affects profit through its effect both on total revenue and total cost. The total revenue or sale proceeds equals price per unit multiplied by the quantity sold. The quantity sold varies with variations in the price, and the total cost as well as the average cost depend on the volume of output. Thus, pricing plays as an important tole in profit planning. Every management attempts to find that combination of price, volume and cost which will be most advantageous to it. If the price is too low, the seller may not be able to cover his costs. Thus, setting the appropriate price is important for every enterprise. Furthermore, since what is a good price today need not be a good price tomorrow, the pricing decision needs to be reviewed and reformulated from time to time.

10.2. Determinants of Price

Since The time of Marshall, it is well known that the price of a product or service is determined by the demand for it and its supply. Both demand and supply are as important in price determination as the blades of a pair of scissors in cutting cloth. The greater the demand and/or smaller the supply, the greater will be the price and vice versa. As explained in the earlier chapters, behind the demand for a commodity lies its utility to the consumers, and supply is governed by the cost of production and the objective of the firm. Competition from rival sellers would affect the demand facing an individual firm. If there is no competitor, all demand will flow to the monopoly firm. In the presence of competitors, the market demand will be divided among the competitors. Competition may also affect the cost of production through its effects on factor prices. The greater the competition in buying various factors of production,

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the higher would be the factor prices, and vice versa. The government exercises its influence on the rice through taxes and subsidies, and direct price controls. Direct price controls take the form of fixation of maximum or minimum price for all output and fixation of the price either for all output (price freeze) or for a part of the output (dual pricing). Thus, in theory, there are five basic determinants of the price of a commodity:

(*a*) the demand for it,

(*b*) its cost of production,

(*c*) objective of its producers,

(*d*) nature of the competition in its market (market structure), and

(*e*) government policy pertaining to it.

To illustrate the role of each of these factors, examples are provided in which each of all these factors but one is constant and the remaining ones are variable. In this section, price determination is explained with the without taxes or subsidies.

Let the demand facing a firm for its product be expressed by the following:

$$Q = 25 - 0.5\,P \qquad \ldots (10.1)$$

(Q = quantity demanded, P = price)

and the supply of this firm, which is obtained from its cost function and its objective as explained be given by the following.

$$Q = 10 + 1.0\,P \qquad \ldots (10.2)$$

(Q = quantity supplied, P = price)

In the absence of any influence from the government, the price for this commodity will be obtained by equating demand and supply:

$$25 - 0.5\,P = 10 + 1.0\,P$$

i.e., P = 10

and Q = 20

If the government imposes a specific sales tax at the rate of, say, Rs. 3 per unit, the new supply function would be

$$Q = 10 + 1.0\,(P - 3) \qquad \ldots (10.3)$$

This is because the seller would charge a price P from the buyers, but from that he would pay ₹ 3 per unit to the government as tax on his sales. The new equilibrium price and quantity would be determined by equating demand of equations with the new supply equation

$$25 - 0.5\,P = 10 + 1.0\,(P - 3)$$

i.e., P = 12

Substituting P = 12 in equations, we get Q = 19. The new price is higher than the old price and the new quantity is lower than the old quantity. Thus, specific taxes tend to raise the price and reduce quantity. Subsidy is a negative tax and its influence on the price could be analysed in a similar way. The role of direct price controls in pricing will be discussed later in the chapter.

Average Pay Load

Average pay load refers to the average number of passengers carried per vehicle per trip.

Notes

Earnings Per Bus Mile (EPBM)

Earnings per bus mile is the ratio of total traffic revenue obtained to total bus miles operated.

Load Factor (or Occupation Ratio)

Load factor is often used to compare the actual operational performance with the maximum potential performance and is usually expressed in percentage. It is presented generally on rate and passenger basis. Load factor on rate basis indicates the relationship between actual traffic income obtained and maximum traffic income that could be realised with the same operation or operations. Load factor on passenger basis refers to the percentage of total number of actual passengers carried to the maximum passenger carrying capacity.

10.3. Objectives of Pricing

The first and foremost objective of pricing policy is of course profit maximisation. However, empirical studies have established certain other objectives besides profit maximisation.

(a) Price Stabilisation

Big firms which have earned adequate return over time, prefer to keep their prices stable inspite of some changes in costs or demand. This may be partly because of the fear of upsetting the market and partly because of the fear of damaging the goodwill of the firm. Firms find it difficult to justify frequently changes in prices. Such price changes have harmful effect on forward planning of turnover, stock, investment and finance. It thus harms the future growth of organisation. Therefore, usually when the demand is good, output is increased and prices tend to remain the same. So also, if the demand slackens, sales efforts are stepped up or output is curtailed, price policies. They ignore short term changes in costs and demand. Thus any fluctuations in wage rates, prices of raw material etc. are borne by profits and not prices. By keeping prices stable, the firm will be able to keep up its reputation and thus earn stable and sure rate of return.

(b) Maintenance of market share

Firms always try to maintain if not increase their market share. This requires a proper assessment of the prevailing competitive conditions in the market for pricing the product. Reputed firms would like to have the maximum share of the market. In order to have the prestige of larger share of market, the firm may sacrifice the present level of profits. They may retain a considerable proportion of profit for future development and distribute the balance among the shareholders.

(c) Target return on capital

Firms have to pursue their pricing policy in order to earn a particular rate of

return on their capital. This is necessary to follow a prudent policy of profit-capital-investment planning as well as capital budgeting. during war time, several companies in the west adopted a cost plus fixed fee method and contractual agreements with the government. Target rate of return on capital is a good policy for new product as there are no rivals. In such cases the usual practice is to have skimming of the market, by exploiting the inelasticity of demand in different markets by maintaining a definite price as long as potential competition permits it. Sometimes firms follow a price penetration policy to capture the market with a low price and.

d. Prevention of competition

Firms as are not able to cut prices in a competitive business environment. Hence pricing policy has managerial discretion when there is some degree of imperfection. Pricing the depends upon market share psychology. Firms try to match their prices to equal the price of the products of their competitors to expand the volume of their business. Most of the firms do this not only to face competition but to prevent it. On the other hand if a firm enjoys some monopoly power, it may try to fix prices to prevent the entry of potential competitors. This may mean lower profits in the short can but helps to maintain monopoly power of the firm.

(e) Ethical pricing policy

Ethical consideration also are a major objective of the firm. Modern firms are not just interested in maximum profits only. They want to maintain good relations' with employees, suppliers, creditors, public and government. Firms are often expected to follow price regulations by the government in carrying out socio-economic programmes. The prices are not fixed with a view to only exploit the consumers.

(f) Good returns for product-line

Multi-product firms have to fix the price of each product independently as well as along with the rest of the products in the product-line. Multi-product firm has some common costs. Further demand elasticities and competitive conditions differ for each product. The firm will have to consider not only the specific conditions faced by each product but also the complementary role of the product in a product-line to finalise optimum set of prices. This firms are found to fix a price which gives maximum profits on the entire range of product instead of a high profit on one product and a very low profit on the rest of the product.

(g) Liquidity

Some firms face the problem of liquidity. They would prefer to keep prices at a level which would ensure rapid cash recovery. Thus they may be willing to charge lower prices for customers who make prompt payment for the product. The other customers who seek two or three months to make final payment will have to settle for higher prices.

From the point of view of the objectives for pricing, the managers of firms may be classified into risk averters and risk lovers. The risk averters are mangers who make prompt payment for the product. The other customers who seek two or three months to make final payment will have to settle for higher prices.

To conclude, no firm can have a single goal of pricing. There are other objectives of pricing like steady working of plants, promotion of new products, etc. Firms often

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combine two or more goals. Thus some firms try to prevent competition rather than maintaining their position. Some firms may be interested in getting a fair return instead of stabilising prices. There are some firms which try to meet competition as well as maintain their share in the market. On the whole it can be concluded that pricing policy differs from firm to firm. Each firm has an order of priorities and the choose objectives from among several alternatives according to conditions that warrant them

10.4. Pricing Methods-In Practice

The first and foremost objective of pricing policy is of course profit maximisation. However, empirical studies have established certain other objectives besides profit maximisation.

(a) Price Stabilisation

Big firms which have earned adequate return over time, prefer to keep their prices stable inspite of some changes in costs of demand. This may be partly because of the fear of upsetting the market and partly because of the fear of damaging the goodwill of the firm. Firms find it difficult to justify frequent changes in prices. Such price changes have harmful effect on forward planning of turnover, stock, investment and finance. It thus harms the future growth of organisation. Therefore, usually when the demand is good output is increased and prices tend to remain the same. So also, if the demand slackens, sales efforts are stepped up or output is curtailed, price does not change. Thus firms tend to consider only long run tends of costs and productivity in their price policies. They ignore short term changes in costs and demand. Thus any fluctuations in wage rates, prices of raw material etc. are borne by profits and not prices. By keeping prices stable, the firm will be able to keep up its reputation and thus earn stable and sure rate of return.

(b) Maintenance of market share

Firms always try to maintain if not increase their market share. This requires a proper assessment of the prevailing competitive conditions in the market for pricing the product. Reputed firms would like to have the maximum share of the market. In order to have the prestige of larger share of market, the firm may sacrifice the present level of profits. They may retain considerable proportion of profit for future development and distribute the balance among the shareholders

(c) Target return on capital

Firms have to pursue their pricing policy in order to each a particular rate of return on their capital. This is necessary to follow a prudent policy of profit-capital-investment planning as well as capital budgeting. During war time, several companies in the west adopted a cost plus fixed fee method and contractual agreements with the government. Target rate of return on capital is a good policy for new product as there are no rivals. In such case the usual practice is to have skimming of the market, by exploiting the inelasticity of demand in different markets by maintaining a definite price as long as potential competition permits it. Sometimes firms follow a price penetration policy to capture the market with a low price and earn higher returns later. In several firms they keep close watch over target return pricing and target market

sharing. They are often incompatible with each other because if a company tries to expand its market, it will have to forget the target return policy.

(d) Prevention of competition

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Firms are not able to cut prices in a competitive business environment. Hence pricing policy has managerial discretion when there is some degree of imperfection. Pricing then depends upon market share psychology. Firms try to match their prices to equal the price of the products of their competitors to expand the volume of their business. Most of the firms do this not only to face competition but to prevent it. On the other hand if a firm enjoys some monopoly power, it may try to fix prices to prevent the entry of potential competitors. This may mean lower profits in the short run but helps to maintain monopoly power of the firm.

(e) Ethical pricing policy

Ethical considerations also are a major objective of the firm. Modern firms are not just interest in maximum profits only. They want to maintain good relations with employees, suppliers, creditors, public and government. Firms are often expected to follow price regulations by the government in carrying out socio-economic programmes. The prices are not fixed with a view to only exploit the consumers.

(f) Good return for product-line

Multi-product firms have to fix the price of each product independently as well as long with the rest of the products in the product-line. Multi-product firm has some common costs. Further demand elasticities and competitive conditions differ for each product. The firm will have to consider not only the specific conditions faced by each product but also the complementary role of the product in a product-line to finalise optimum set of prices. Thus firms are found to fix a price which gives maximum profits on the entire range of product instead of high profit on one product and a very low profit on the rest of the product.

(g) Liquidity

Some firms face the problem of liquidity. They would prefer to keep prices at a level which would ensure rapid cash recovery. Thus they may be willing to charge lower prices for customers who make prompt payment for the product. The other customers who seek two or three months to make final payment will have to settle for higher prices.

From the point of view of the objectives of pricing, the managers of firms may be classified into risk averters and risk lovers. The risk averters are managers who recommend safe pricing policies rather than aim at maximum profits which involves a lot of risk. Risk loving managers are those who would follow any price policy, however unorthodox it may be, in order to maximise profits.

10.5. Pricing Under Different Market Structure

The determination of price is affected by the competitive structure of the market. This is because the firm operates in a market and not in isolation. In making decisions concerning economic variables, it is affected, as are all institutions in society, by its environment.

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The phrase "competitive structure", the nature and extent of the monopolistic elements, if any, that are present in any particular market structure. The economists' classification of markets on this basis is illustrated as follows.

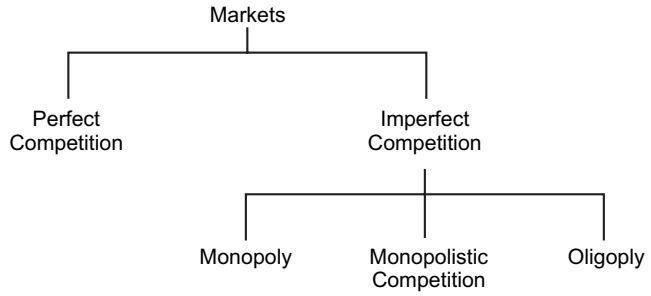

Fig. 10.1. Classification of Market

The salient features and the pattern of price determination in each of these markets is explained below:

10.5.1. Pricing Under Perfect Competition

A perfectly competitive market is characterized by the following features:

(*i*) *A large number of buyers and sellers.* The number of buyers and sellers is large and the share of each one of them in the market is so small that none has any influence on the market price.

(*ii*) *Homogeneous product*. The product of each seller is totally undifferentiated from those of the others.

(*iii*) *Free entry and exist*. All buyer and seller is free to enter or leave the market of the commodity.

(*iv*) *Perfect knowledge*. All buyers and sellers have perfect knowledge about the market for the commodity.

(*v*) *Indifference*. No buyer has a preference to buy from a particular seller and no seller to sell to a particular buyer.

Under such a market, no single buyer or seller plays a significant role in price determination. However, all of them jointly determine the price. The price is determined in the industry, which is composed of all the buyers and sellers for the commodity. The demand curve facing the industry is the sum of all consumer' demands at various prices. The industry supply curve is the sum of all sellers' supplies at various prices. The equations of the industry's demand and supply curves are similar to the above equations (1) and (2) respectively, and the price is determine by equating demand and supply as before.

Both the individual firm and the individual consumer treat the price as given. The demand curve facing an individual firm is horizontal-perfectly elastic. This follows from the first feature of the perfectly competitive market-the relative insignificance of each firm and customer so that none of them can affect the price noticeably. A single wheat producer or consumer can do nothing about its price. If a producer raises the price of his wheat above the going price, he will be unable to sell anything. Similarly, he would gain nothing by cutting his price below the market price , for at

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the prevailing price be can sell any amount he produces. Thus, an individual firm has no price decision to make-the price figure is simply handed to it.

Different firms have different cost functions depending upon the factors of production utilized by them. Firms having more efficient input factors would have lower costs for each output level than the other firms having less efficient factors of production. Since the price is given and demand is no constraint to an individual seller, it cost function and objective would determine its equilibrium output. If the industry demand and supply functions were (1) and (2), the price would be 10. In order to explain the equilibrium of a firm under perfect competition, let the cost function of the firm be

$$C_1 = 25 - 2Q_1 + 4Q_1^2 \quad \ldots (3)$$

If the firm aims at maximum profit, it would maximize the following function with respect to input:

$$\begin{aligned} \pi_1 &= R_1 - C_1 \\ &= PQ_1 - (25 - 2Q_1 + 4Q_1^2) \\ &= 10Q_1 - 25 + 2Q_1 + 4Q_1^2 \text{ (Since P = 10)} \end{aligned}$$

i.e., $$\pi_1 = -25 + 12Q_1 - 4Q_1^2 \quad \ldots (4)$$

For π_1 to be maximum with respect to Q_1, the first derivative of function (4-10) must be zero, and the second derivative must be negative:

$$\frac{d\pi_1}{dQ_1} = 10Q_1 - 25 + 2Q_1 + 4Q_1^2 \text{ (Since P = 10)}$$

or, $$Q_1 = 1.5$$

$$\frac{d\pi_1^2}{d_2Q_1} = -8, \text{ which is negative.}$$

Thus, the equilibrium output of firm 1 is 1.5. It can be verified that the necessary condition for profit maximization, i.e., the first derivative of the profit function be zero is the same as the condition that the marginal revenue (MR) be equal to the marginal cost (MC). Since under perfect competition, the price is parameter to an individual firm and so P = MR, this condition is tantamount to P = MC, The sufficient condition that the second derivative of the profit function be negative, in terms of geometry, means that the MC curve must intersect the MR curve from below.

The Price determination and equilibrium of the firm under perfect competition is illustrated in Figure 10.2.

The firms's demand curve is horizontal at the price determined in the industry by the intersection of the demand and supply curves. The demand curve is also the firms's average revenue curve. This is because if all units of a commodity are sold at the same price, the revenue brought in by an average unit must be its price. Also, we know that where the average revenue is neither rising nor falling, it will coincide with the corresponding marginal curve. Thus, D_1D_1 is the AR curve and also the MR curve. Thus, ATC and MC are the firms's average total cost and marginal cost curves, respectively. The firm reaches its equilibrium at point E, when P = MC and the MC curve intersects the MR curve from below. The firm's equilibrium output is OQ_1^2.

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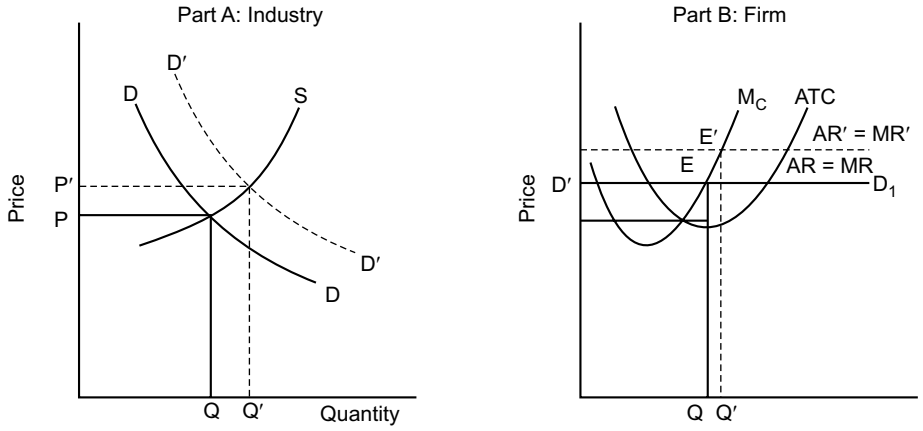

Fig. 10.2. Pricing under perfect competition

It may be noted that the firm under discussion makes profits equal to the area of rectangle D_1EFG. In the short-run, a firm can make profit, loss, or just break-even depending upon its cost function and market conditions. However, in the long-run no firm makes profit or loss under perfect competition. This follows from the feature of free entry and exit which characterize a perfectly competitive market.

A changes in the market demand function or/and in the market supply function would cause a change in the market price, industry output, and the output levels of various firms in the industry. For example, if the market demand curve were D′D′ instead of DD, the market price would be OP′, industry output OQ′ and the firms's output OQ′

10.5.2. Pricing under imperfect Competition

(i) Monopoly

The monopoly market for a commodity is characterized by the following features:

(*a*) *Single seller:* There is only one seller of the commodity.

(*b*) No close substitutes: There are no close substitutes for the monopolist's product and the seller faces no imminent threat of competition.

Under such a market, the firm and the industry coincide by definition. The demand function facing a monopolist is the same as that facing he industry. Thus, monopolist's demand curve would be falling. A monopolist, like a perfectly competitive firm, would be expected to have U-shaped average and marginal cost curves. The situation would be as shown in Figure 10.2.

The equilibrium of a profit maximizing monopolist will be at the point where MR = MC and the MC curve cuts the MR curve from below. In Figure 10.3, Part A, E is the equilibrium point, OP is the equilibrium price and OQ is the equilibrium output. The firm makes profit represented by the area of rectangle PABC.

A monopolist could make profit both in the short and long run. He could also end up with zero profit and could even incur loss in the short-run. However, he must cover all variable costs and so his loss cannot exceed his total fixed cost. The monopolist will break-even if the ATC curve is tangent to the R curve at the point of equilibrium. This is illustrated in Figure 10.3.

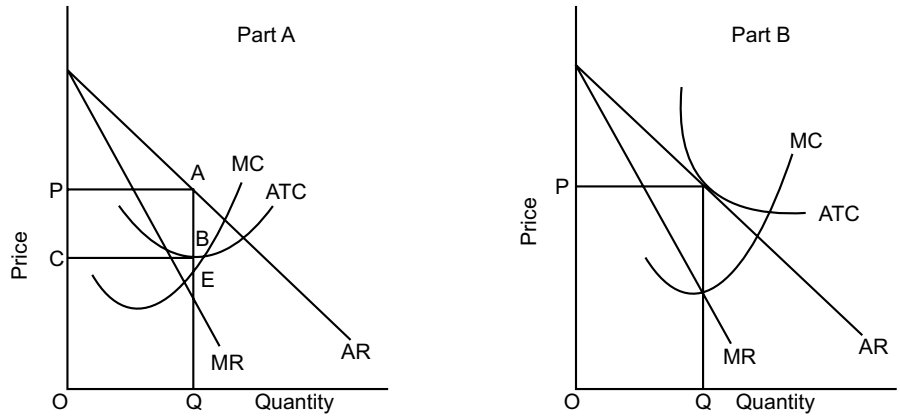

Fig. 10.3. Pricing under monopoly

In general, the monopolist will produce less than the optimum output, i.e., output at which the ATC is minimum. The optimum output is the socially desirable level of output and hence we find government policies restricting monopoly practices. Furthermore, the monopolist's price is generally higher than his ATC and the difference between these two measures the extent of the monopoly power; the larger the difference, the greater is the monopoly power and vice versa.

It should be noted that a monopolist firm can determine either its price or its output but not both, for the remaining variable is determined by the demand function on which the firm has no control. This is different from the position of a competitive firm which has no control on its price and can determine its output only.

It is not necessary to take a numerical example to illustrate pricing under monopoly. Suffice it to say that given the demand function facing a monopolist and his cost function, the equilibrium price and output will be determined in exactly the same way as explained earlier in this chapter.

(ii) Pricing Under Monopolistic Competition

A market with "monopolistic competition" as defined by Edward Chamberline or "important competition", a term made popular by Joan Robinson, possesses the following features.

(*i*) *A large number of buyers and sellers:* There are many sellers of a commodity each with an insignificant share of the market so that the activities of each have to effect on others. Similarly, there are large number of buyers in such a market.

(*ii*) *Differentiated product:* Each firm produces basically the same product but endeavours to distinguish it from its rivals by product differentiations. The difference will often only be marginal or a matter of branding or packaging, but the manufacturer sets out to establish his product as unique even though it has in fact very close substitutes.

(*iii*) Free entry and exit: Individual buyers and sellers are free to enter or leave the market.

Since products are similar but not identical, there will be no unique price. Instead there will be a cluster of market prices reflecting consumer opinions of comparative qualities of differentiated products. The price of an individual firm's product is

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determined by its cost function, demand, its own objective and by government regulations, if any. The demand curve of the firm has a downward slope because of product differentiation and attachment of consumers to particular brand names. As larger and larger price reduction are instituted by a firm, more and more customers from its rivals will come to it. Even customers who are attached to a particular brand mane and/or to a particular firm will switch to others when the price reduction by the latter are large. However, the demand curve is highly elastic (more elastic than that faced by a monopolist) within the relevant price-output range, for numerous good substitutes are available for his product. The cost function of a firm under such a market structure would be similar to that under other types of markets. The equilibrium of a firm under such a market structure is illustrated in Figure 10.3.

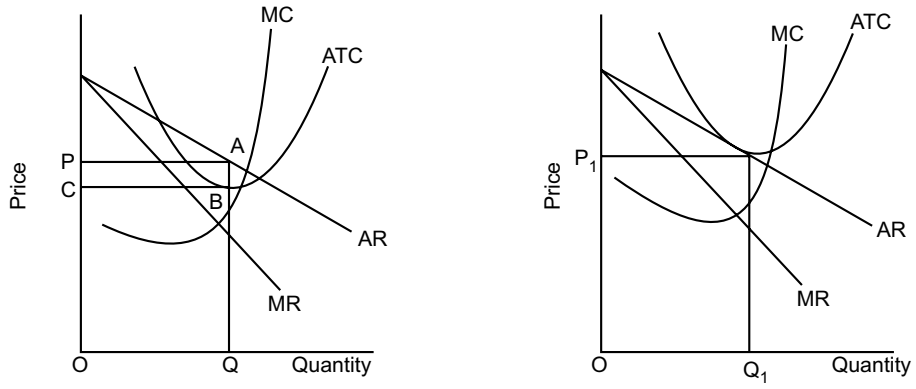

Fig. 10.4. Pricing under monopolistic competition

In the short-run, a firm may or may not earn profit. The firm in Figure 10.3, Part A is in equilibrium at price OP and output OQ. It makes profit equal to the area of rectangle PABC. In the long-run, no firm would make any profit or loss. Because of free entry, profits of the short-run will attract new firms, which will take some customers away from existing firms. This would reduce the demand for the existing firms' products and thus the demand curve facing the existing firms would shift to the left. This shift will continue as long profits exist, or until the demand curve becomes tangent to the average cost curve as in Figure 10.3, Part B. At this point, the entry will stop because there are no profits to be made. The firm will charge OP_1 price and sell OQ_1 quantity. The opposite will happen if any firm is making losses in the short-run.

It should be noted that under monopolistic competition in the long-run, the equilibrim output is less than the optimum output. This is because the demand curve is falling, and in order that the AC curve is tangent to the demand curve the former must be falling too. Since the AC curve falls before it reaches its minimum level, the equilibrium output is less than the optimum output and the equilibrium output is termed as "excess capacity" and so there exists excess capacity in a market characterized by monopolistic competition. For similar reasons, price in such a market is higher than the minimum average total cost.

(iii) Pricing Under Oligopoly

A special and increasingly important case of imperfect competition is that of oligopoly. It is characterized by a few sellers of a commodity in which the actions of any individual seller have a perceptible influence upon his rivals. The product of rival

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firms could be both homogeneous or heterogeneous. If the product is standardized, the market is called homogeneous oligopoly and, if differentiated, heterogeneous oligopoly. A special type of oligopoly is duopoly, which has only two sellers.

Interdependence in the decision making of the various sellers is the main feature of an oligopoly market. Any change in price on the part of one firm may set off a chain of reactions among other firms. Thus, the decision maker must consider the potential reactions before changing his price. The reactions of rival firms are difficult to guess, for a very wide variety of behaviour patterns is possible. Rivals may decide to get together and cooperate in the pursuit of their objectives to the extent permitted by law, or at the other extreme, they may try to fight each other to elbow out their rivals. As a result, price is indeterminate under oligopoly unless some assumption is made about the behaviour of rivals. Several models have been developed on different assumptions to explain pricing in such a market. These include the Cournot model, Collusion model, Market-share model, and the Leader-follower model.

Augustin Cournot provided a solution to the oligopoly problem by assuming that each oligopolist maximizes his profit on the assumption that quantity produced by his rival is invariant with respect to his own quantity decision. The Collision solution postulates that the oligopolist recognize their mutual inter-dependence and agree to act in unison in order to maximize the total profit of the industry. The decision making is centralized and every oligopolist surrenders his autonomy of making decisions affecting prices and output, and accepts the policies laid down by the centralized authority. The centralized authority, which is called a "cartel", sets the price and output so as to maximize the total profit of the industry. Where cartels are illegal, the price can be determined through a tacit agreement either on the basis of a given share of each oligopolist in the total market or through recognition of one firm as the "leader" and all other firms as its "followers" in pricing decisions. In either case, price id determined under oligopoly.

In the absence of any such understanding among rival firms, there will be "price wars" in oligopolistic markets. In price wars each competitor shades his price below that of the other and consequently some times the oligopoly price falls even below average variable cost. Oligopolists are aware of such undesirable events and so price wars are becoming less and less frequent over time. Managers have learned, some through bitter experience, that price wars do not pay and are very costly and so they either enter into an understanding among themselves of some sort to their common advantage or do not choose to compete in price. In the latter case, competition among rivals takes the form of product variation or advertising. In the automobile industry, for example, competition is in terms of style and new models produced each year. In the cigarette and tooth paste industries, competition is mainly in the form of introducing new brands and advertising.

Price Rigidity and the Kinked Demand Curve

Prices in many oligopolistic industries appear to have exhibited a remarkable degree of stability particularly in their resistance to change in the downward direction. An explanation of this is provided by the in their resistance to change in the down ward direction. An explanation of this is provided by the "kinked" demand curve. The demand curve faced by an oligopolistic industry is said to have a kink at the prevailing

Notes

price because of the asymmetric behaviour of firms in response to variations in prices by the rival firms. Its proponents believe that competitors follow price decreases but they do not follow price increases by their rival firms. This is because, if the price is reduced by a firm, its competitors will feel the drain on their customers quickly and so they will be forced to match this price cut. Consequently, the firm which first lowered the price may not be able to increase it sales appreciably. On the other hand, if a firm raises its price, other oligopolists may not raise their price because they will be happier now than before as they tend to attract more customers. Thus, the firm which raises the price will experience a significant cut in its sales. For these reasons, the demand curve of an oligopolist is actually a composite of two demand curves, one is valid for price increases and the other for price decreases. It should be obvious that the former will be more price elastic than the latter. This is illustrated in Figure 10.4.

In figure 10.5 OP is the current price, R_1D_1 is the demand curve for price increases and RD is that for price decreases. The true demand curve facing the oligopolist is R_1ED_2 which has a kink at the current price OP. Corresponding to a kink in the demand curve, there will be a discontinuity (AB) depends on the elasticities of the two parts of the demand curve.

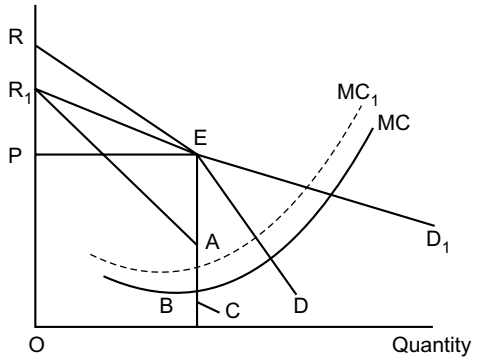

Fig. 10.5. The kinked demand curve.

In the presence of a kinded demand curve of this type, a firm would have no motive to change its price. Furthermore, a profit-maximizing firm, which equates its MR and MC, would not change its price even if this cost changes so long as changes in the marginal cost fall within the discontinuous range of the MR curve. For example in Figure 10.4, if the new MC curve is MC_1, the equilibrium price remains invariant at OP.

10.6. Price Discrimination

Price discrimination arises when a firm sells its (homogeneous) product at different prices at the same time. Examples of price discrimination are found in service industries, in socially desirable but scarce goods industries, and in industries which meet both domestic and international demands. Medical doctors, government hospitals, advocates, and professors for private services and consulting assignments often charge different prices from different customers for the same service. Commodities like foodgrains and sugar, under ration are sold at the low controlled price for a certain amount to all or certain groups of people and at the high free market price for extra amounts or to different groups of people. Railways charge

different freight rates for different goods. Airlines and railways provide concessional rates to students travelling during vacation from their schools to home towns and back. Sometimes, a country which is short of foreign exchanges sells its exports in foreign markets at lower rates than in its domestic market. In contrast to this, government restrictions lead to scarce commodities like groundnut oil being sold at cheaper rates in Gujarat, for example, than in other states. This is comparable to the price discrimination that is practiced between the domestic and foreign markets. One state treats another state or the rest of the country as foreign! While some of these and other cases of price discrimination may be influenced by the objective maximizing profit, others may be justified on the plea of social justice or protection of certain interest groups.

Price discrimination is possible if and only if:

(*i*) *the market is segmentable.* The various parts of a market must be divisible into sub-markets. That is, customers should be distinguishable on some basis; for example, rich and poor, nationals and foreigners, consumers and producers. If the various parts of a market are not distinguishable, one would not know what price to charge in which particular market.

(*ii*) *there is not resale*. The resale of the product is either not possible or banned. For example services like consulting and haircut cannot be resold, and a domestic customer may not be allowed to resell in the foreign market. If resale is possible, then some of the customers who buy at the cheaper rate would render price discrimination ineffective by selling to customers who could buy only at the higher rate from the firm.

Example 10.1

The market price of a transformer is ₹ 50,000 and the discount allowed to the distributor is 20% of the market price. It is found that selling expenses cost is 1/4th the factory cost and if the material cost, labour cost and factory overhead charges are in the ratio of 1 : 4 : 2. What profit is made by the firm on each transformer, if the material cost is ₹ 4,000/-

Solution:

Marketing Price of transformer = ₹ 50,000

After 20% discount, the net rate

$$\left(50,000 - 50,000 \times \frac{20}{100}\right) = ₹\ 40,000$$

The ratio of material cost and labour cost and factory overhead charge = 1 : 4 : 2

$$\text{Material cost} = 4,000$$

$$\text{Labour cost} = 16,000$$

$$\text{Overhead charges} = 8,000$$

$$\text{Factory cost} = 28,000$$

The selling experience is 1/4

$$\text{Of factory cost} = \frac{28,000}{4}$$

$$= 7,000$$

Actual price = 28,000 + 7000 = 35,000

The profit/tranformer = 40,000 – 35,000 = ₹ 5,000

Example 10.2

Notes

The variable overhead charges for a resistor are ₹ 2 and fixed overhead charges per month are ₹ 35,100. It is found that 65,000 pieces of this resistor are manufactured per month under normal conditions.

(1) Find the normal overhead cost per resistor (2) If the production drops to 90% determine the overhead charges that are unrecovered, (3) If the production is increased to 130% by what amount these charges will be over recovered?

Solution:

Variable overhead charges/resistor = ₹ 2

Fixed overhead charges/month = ₹ 35,100

Total amount of transistor manufactured = 65,000 pieces

$$\text{Normal OH/Transistor} = 2 + \left(\frac{35,100}{65,000}\right) = ₹\ 2.54$$

If the Production dropping to 90%

$$\text{Then the new production} = 65,000 \times \frac{90}{100}$$

$$= 58,500 \text{ pieces.}$$

The fixed overhead charges = ₹ 58,500 × ₹ 0.54

(2.54 – 2 = 0.54) = ₹ 31,590

The uncovered overhead = 35,100 – 31,590 = ₹ 3150

If the production increased to 130%

$$\text{Then the new production} = 65,000 \times \frac{130}{100}$$

$$= 84,500 \text{ pieces}$$

Fixed overhead charges = 84,500 × ₹ 0.54

= ₹ 45,630

The overhead recovered = ₹ 45,630 – ₹ 35,100

Over head charges = ₹ 10,530

10.7. Summary

- Price affects profit through its effect both on total revenue and total cost.
- Five basic determinants of the price of a commodity:
  - (*a*) the demand for it,
  - (*b*) its cost of production,
  - (*c*) objective of its producers,
  - (*d*) nature of the competition in its market (market structure), and
  - (*e*) government policy pertaining to it.

- Average pay load refers to the average number of passengers carried per vehicle per trip.
- Earnings per bus mile is the ratio of total traffic revenue obtained to total bus miles operated.
- Load factor is often used to compare the actual operational performance with the maximum potential performance and is usually expressed in percentage.
- The first and foremost objective of pricing policy is of course profit maximisation.
- The determination of price is affected by the competitive structure of the market
- Price discrimination arises when a firm sells its (homogeneous) product at different prices at the same time.

Notes

10.8. Review Questions

1. What are the Determinants of Price.
2. Define Average Pay Load.
3. What is EPBM.
4. Define Load Factor.
5. What are the objectives of pricing.
6. What is meant by the term liquidity.
7. What are the characteristics of perfectly competitive market.
8. Write short notes on pricing under monopoly.
9. What are the features of market with monopolistic competition.
10. Explain kinked demand curve.
11. What is price discrimination.

Unit–11

Revenue and Revenue Curves

Notes

Structure

11.1. Introduction
11.2. Relationship Between Average Revenue and Marginal Revenue
11.3. Relationship Between AR, MR, TR and Elasticity of Demand
11.4. Summary
11.5. Review Questions

11.1. Introduction

Average revenue is the revenue per unit of the commodity sold. It is found by dividing total revenue by the number of units sold. But since different units of a commodity are sold at the same price, in the market, average revenue equals price at which the commodity is sold. Thus, average revenue means price. Since the consumer's demand curve is a graphic relation between price and the amount demanded, it also represents the average revenue or price at which the various amounts of a commodity are sold, because the price offered by the buyer is the revenue from the seller's point of view. Therefore, average revenue (AR) curve of the firm is really the same thing as demand curve of the consumer.

On the other hand, marginal revenue at any level of a firm's output is the net revenue earned by selling another (additional) unit of the product. Algebraically, it is the addition to the total revenue earned by selling '*n*' units of product instead of *n* – l, where *n* is any given number. The word net in this definition is important. If the price of a product falls when more of it is offered for sale then that would involve a loss on the previous units which were sold at a higher price before and will now be sold at the reduced price along with the additional one. This loss in the previous units must be deducted from the revenue earned by the additional unit.

Suppose a firm is selling 7 units of the output at the price of ₹ 16 per unit. Now, if it wants to sell 8 units instead of and thereby the price of the product falls to ₹ 15 per unit, then the marginal revenue will not be equal to ₹ 15 at which the eighth unit is sold. Seven units, which were sold at the price of 16 before, will now all have to be sold at the reduced price of ₹ 15 and that will mean the loss of one rupee on each of the previous 7 units. The total loss on the previous units would be equal to ₹ 7. Therefore, this loss of ₹ 7 should be deducted from the price of ₹ 15 of the eighth unit while reckoning the marginal revenue. The marginal revenue in this case, therefore, will be ₹ 15 – ₹ 7 = ₹ 8 and not ₹ 15 which is the average revenue.

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The marginal revenue can also be directly found by taking out the difference between the total revenues before and after selling the additional unit as follows:

Total revenue when 7 units are sold at the price of

$$₹ 16 = 7 \times 16 = ₹ 112$$

Total revenue when 8 units are sold at the price of

$$₹ 15 = 8 \times 15 = ₹ 120$$

Therefore, Marginal Revenue or the net revenue earned by the 8th unit = 120 – 112 = 8

Thus, Marginal Revenue of the nth unit.

= difference in total revenue in increasing the sale from $n - 1$ to n units.

Or

= Price of nth unit minus loss in revenue on previous units resulting from price reduction.

Generally speaking, marginal revenue is less than price as indicated by the above formula. But in perfect competition, when a firm can sell any amount at the ruling market price, marginal revenue is equal to average revenue or price since there is no loss incurred on the previous units.

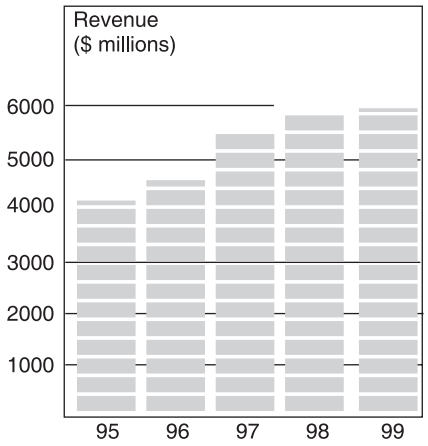

Fig. 11.1.

11.2. Relationship Between Average Revenue and Marginal Revenue

Let us consider the relationship between marginal, average and total revenue at previous levels of output more fully with the help of a table given below. This table represents a situation of a hypothetical firm.

Notes

Table 11.1. Total average and marginal revenue schedules.

Number of unis sold	Price or average revenue	Total revenue AR × (addition quantity sold)	Marginal revenue made t total revenue
(1)	(2)	(3)	(4)
1	22	22	22
2	21	42	20
3	20	60	18
4	19	76	16
5	18	90	14
6	17	102	12
7	16	112	10
8	15	120	8
9	14	126	6
10	13	130	4

In the above table, Column 2 shows the average revenue, while Column 4 shows the marginal revenue. Marginal revenue has been derived from the total revenue column of the table. Thus, in going from two to three units the marginal revenue is 18 and this is found out by subtracting 42 from 60, and so on. The table further indicates that when average revenue is falling, marginal revenue is less than average revenue.

(*i*) Total Revenue = Price × Quantity

$$TR = P \times Q$$

(*ii*) Average Revenue = $\frac{\text{Total revenue}}{\text{Quantity}}$

$$AR = \frac{TR}{Q}$$

(*iii*) Marginal Revenue = $\frac{\text{Change in total revenue}}{\text{Change in quantity}}$

$$MR = d\frac{\Delta TR}{\Delta Q}$$

Example:

(*i*) If the demand curve is given as

$P = 10 - 4Q$ then find (*i*) The total revenue TR, and

(*ii*) The marginal revenue MR

$$TR = P \times Q$$

$$= (10 \times 4Q) \times Q$$

$$TR = 10Q - 4Q^2 \quad ...(i)$$

$$\text{Marginal revenue} = \text{Derivation of total revenue}$$

$$\frac{D}{DX}(TR) = MR = 10Q - 4Q^2$$

$$MR = 10 - 8Q = 0$$

$$8Q = 10$$

$$Q = \frac{10}{8} = \frac{5}{4}$$

Under Perfect Competition

When competition is perfect, as already seen, the average revenue curve of the firm is a horizontal straight line. This is so because an individual firm under perfect competition, by its own action, cannot influence the price. The seller under perfect competition can sell any amount of the commodity at the ruling market price. In this case:

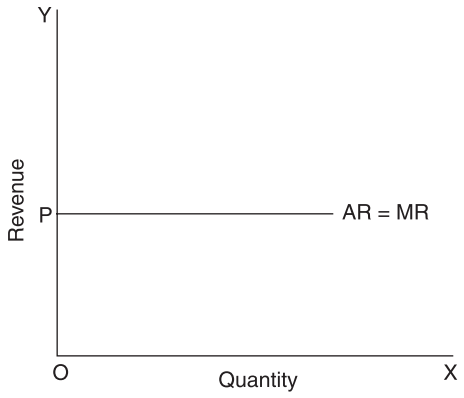

Fig. 11.2. AR and MR curves under perfect competition.

When average revenue curve is the horizontal line the marginal revenue curve coincides with the average revenue curve. This is so because additional units are sold at the same price as before and no loss is incurred on the previous units which would have resulted—if the sale of additional units would have forced the price down.

The average revenue and marginal revenue curves of a firm under perfect competition are shown in Fig. 11.2.

Under Imperfect Competition

By converting the schedules of Average Revenue given in table along side into curves, we get two downward sloping curves and find that marginal revenue curve is below average revenue curve. This is shown in Fig. 11.3 AR is the average revenue curve and MR, the dotted curve, is the marginal revenue curve. As we shall see in a later chapter, the divergence between the average revenue and marginal revenue as shown in the figure here is actually found when a firm is working under conditions of monopoly or imperfect competition. It is quite obvious that when price is falling as indicated by the declining AR curve, the marginal revenue must always be less than average revenue, because a falling price must mean some loss on the sale of additional supply. That is why MR curve lies below AR curve.

Notes

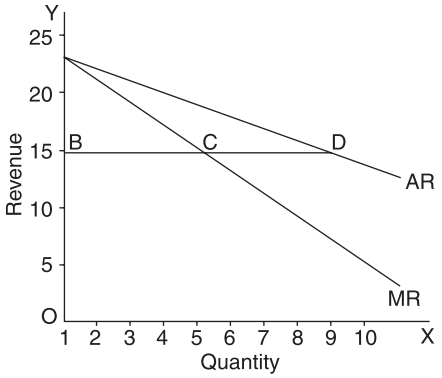

Fig. 11.3. AR and MR curves under imperfect competition.

How much is MR below AR? We have seen above that when average revenue curve falls downward, the marginal revenue curve lies below it (or to the left of it). Now the question arises how far to the left (or below) will it lie? This will depend on the shape of the AR and MR curves: (*a*) They may be straight downward sloping lines or (*b*) they may be convex to the origin; or (*c*) they may be concave to the origin.

(*a*) When both the marginal revenue curve and average revenue curve are straight lines and sloping downwards, as shown in Fig. 11.3, the marginal revenue curve will cut in the middle of any line perpendicular to the Y-axis. That is, if from D, any point on the average revenue curve, we draw DB a perpendicular to the Y-axis, then marginal revenue curve MR must pass through the middle of this perpendicular, i.e., through C, where DC = BC.

(*b*) However, if the average revenue curve is convex to the origin, as in Fig. 11.3, the marginal revenue curve MR cuts any line perpendicular to the Y-axis more than half-way from the average revenue curve, i.e., DC > BC.

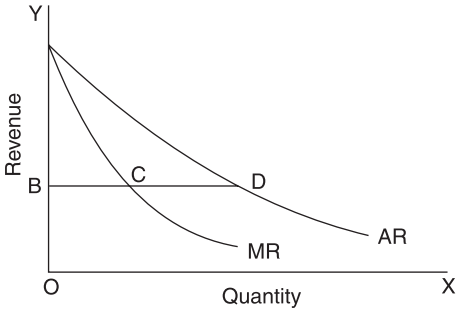

Fig. 11.4. Convex AR and MR.

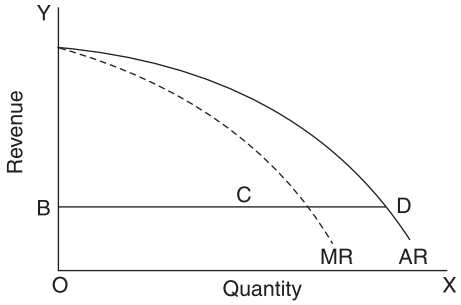

Fig. 11.5. Concave AR and MR.

(*c*) Again, where the average revenue curve is concave to the origin (Fig. 19.5), the marginal revenue curve cuts any perpendicular line to the Y-axis less than half-way from the average revenue curve, i.e., DC < BC.

Revenue Curve in Oligopoly Market

In oligopoly market the demand curve is of a kinky nature. It is referred as kinky demand curve.

In the above diagram. X-axis is quantity and Y-axis is price. 'DD' is total market demand curve, whereas 'd_1d_1' is the individual firm demand curve, but this firm is a

leader which is selling maximum output. Hence in the oligopoly the demand curve takes the slope of 'd_1 ED'. It is having a bend kink at point E.

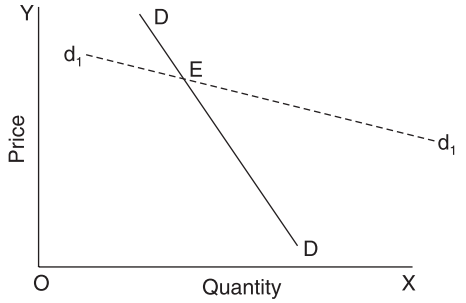

Fig. 11.6. Demand under oligopoly.

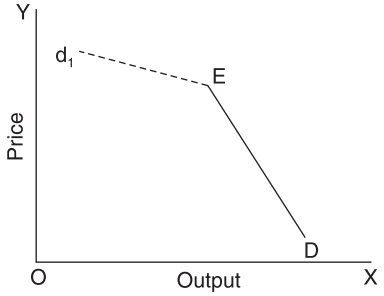

Fig. 11.7. Kinky demand curve.

The above diagram shows the 'kinky demand curve' concept of oligopoly market.

Elasticity of Demand, Average Revenue and Marginal Revenue

There is a very useful relationship between elasticity of demand, average revenue and marginal revenue at any level of output. We shall make use of this relation extensively when we come to the study of price determination under different market conditions. Let us study briefly what this relation is:

We have stressed above that the average revenue curve of a firm is really the same thing as the demand curve of consumers for the firm's product. Therefore, elasticity of demand at any point on a consumer's demand curve is the same thing as the elasticity on the given point on the firm's average revenue curve. We have already seen how elasticity of demand at any point on the demand curve is measured. With this measure of point elasticity of demand, we can study the relationship between average revenue, marginal revenue and elasticity of demand at any level of output.

In Fig. 11.8, AR and MR respectively are the average and the marginal revenue curves. Elasticity of demand at point R on the average revenue curve

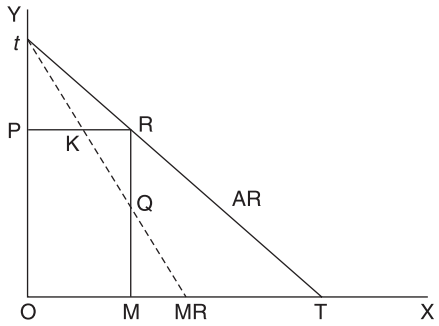

Fig. 11.8. AR, MR and price elasticity of demand.

$$= \frac{RT}{Rt}$$

Now, in triangles PtR and MRT

$\angle tPR = \angle RMT$ (right angles)

$\angle tRR = \angle RTM$ (corresponding angles)

$\angle PtR = \angle MRT$ (being the third angle)

Notes

Notes

Therefore, triangles PtR and MRT are equiangular,

Hence, $\frac{RT}{Rt} = \frac{MR}{tP}$ ...(*i*)

In the triangle PtK and KRQ

$PK = RK$

$\angle PKt = \angle RKQ$ (vertically opposite)

$\angle tPK = \angle KRQ$ (right angles)

Therefore, triangles P*t*K and RQK are congruent (i.e., equal in all respects).

Hence, $Pt = RQ$ ...(*ii*)

From (*i*) and (*ii*) we get

Elasticity at $R = \frac{RT}{Rt} = \frac{MR}{tP} = \frac{RM}{RQ}$

Now, it is obvious from Fig. 11.8 that

$$\frac{RM}{RQ} = \frac{RM}{RM - QM}$$

Hence, elasticity at $R = \frac{RM}{RM - QM}$

It will also be clear from the figure that RM is average revenue and QM is the marginal revenue at the output OM which corresponds to the point R on the average revenue curve. Therefore,

Elasticity at $R = \frac{\text{Average revenue}}{\text{Average revenue} - \text{Marginal revenue}}$

If, A stands for Average Revenue

M stands for Marginal Revenue

e stands for Point Elasticity on the Average Revenue Curve

Then $e = \frac{A}{A - M}$

It follows from this that

$eA - eM = A$

$\therefore \quad eA - A = eM$

$\therefore \quad A(e - 1) = eM$

$\therefore \quad A = \frac{eM}{e - 1}$

Hence, $A = M\left(\frac{e}{e - 1}\right)$

And also, $M = A\left(\frac{e - 1}{e}\right)$

The general rule therefore is: At any output,

Average Revenue = Marginal Revenue $\times \frac{e - 1}{e}$ and Marginal Revenue

$= \text{Average Revenue} \times \frac{e - 1}{e}$,

where *e* stands for Point Elasticity of Demand on the Average Revenue Curve.

With the help of these formulae, we can find marginal revenue at any output

from average revenue at the same output, provided we know the point elasticity of demand on the average revenue curve. If the demand elasticity of a firm's average revenue curve is equal to one, marginal revenue equals zero, because:

$$M = A\left(\frac{e-1}{e}\right) = A\left(\frac{1-1}{1}\right)$$
$$= A \times 0 = 0.$$

Similarly, when demand elasticity on a firm's average revenue curve is 2, the marginal revenue equals half the average revenue. This is because:

$$M = A\left(\frac{e-1}{e}\right) = A\left(\frac{2-1}{1}\right)$$
$$= A\left(\frac{1}{2}\right) = \frac{1}{2}A.$$

By applying the formula for various elasticities of demand at different points (or at different levels of output) on the average revenue curve, it will be found that marginal revenue is always positive at any point or output where the elasticity of the average revenue curve is greater than one, and marginal revenue is always negative where the elasticity of the average revenue curve is less than one.

11.3. Relationship Between AR, MR, TR and Elasticity of Demand

By making use of the formula given above MR = AR $\frac{e-1}{e}$, where MR is marginal revenue, AR is average revenue and e is elasticity of demand, we can find out the relationship between AR, MR and TR on the one hand and elasticity of demand on the other.

If the elasticity of demand e is equal to one then:

$$MR = AR\left(\frac{e-1}{e}\right)$$
$$= AR \times \frac{0}{1} = 0$$
$$= AR \times \left(\frac{1-1}{1}\right)$$

Similarly, it can be shown that if $e > 1$, MR is positive and if $e < 1$, MR is negative.

The relationship can be illustrated by the following diagram (Fig. 11.9).

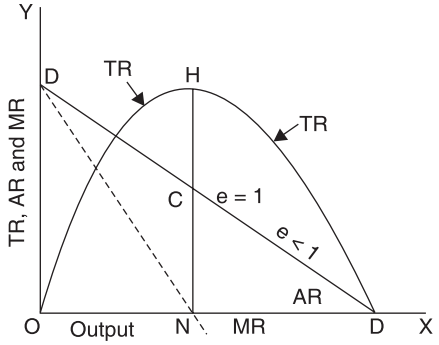

Fig. 11.9. AR, MR and TR.

In this diagram DD is a straight line demand curve or AR curve, MR is the marginal revenue curve and OD is the total revenue curve. At the middle point C of AR curve elasticity is one ($e = 1$). On its lower half it is less than one-one ($e > 1$). Referring to the formula.

Notes

11.4. Summary

- ?
- ?
- ?

11.5. Review Questions

1. Explain the relationship between average revenue and marginal revenue with the help of the concept of elasticity of demand.
2. Distinguish between total tevenue, average revenue and marginal revenue. Explain their relationship.
3. Show low average and marginal revenue curve can be derived from total product curve.
4. Why do average and marginal revenue curves of a firm all under in perfect competition?
5. Explain the average revenue curve of a firm under perfect competition. Is it identical with its marginal revenue curve? Give reasons. What is the shape of this curve?
6. What is the importance of average and marginal revenue curves in determining producer Equilibrium?
7. Explain "marginal revenue curve of a firm cannot be above its average revenue curve."
8. Show that the equality between a firm's marginal revenue and marginal cost is a necessary, but not sufficient, condition for profit maximization.
9. Explain the meaning of average revenue and marginal revenue of a firm. Explain and illustrate the nature of their respective curves in perfectly competitive and monopoly markets.
10. Establish the relationship between the marginal revenue, the average revenue and the elasticity of demand. Can the elasticity of demand be less than unity at the equilibrium price of a commodity (*a*) under perfect competition, and (*b*) under monopoly?

Equilibrium of the Firm and Industry

Notes

Structure

12.1. Introduction
12.2. Equilibrium of Firm: By Curves of Total Revenue and Total Cost
12.3. Equilibrium of Firm: By Curves of Marginal Revenue and Marginal Cost
12.4. Equilibrium of Industry
12.5. Conditions of Equilibrium
12.6. Incorporating Normal Profit Into Average Cost Curve
12.7. Validity of Profit Maximizing Doctrine
12.8. Goals Other Than Profit Maximization
12.9. Summary
12.10. Review Questions

12.1. Introduction

A firm is said to be in equilibrium when it has no incentive either to expand or to contract its output. A firm would not like to change its level of output only when its total profits are the maximum. A rational entrepreneur will expand output if he thinks he can increase his total profits by doing so, and likewise, he will contract his output if he thinks he can avoid losses and thus increase his total profits. Therefore, a firm is in equilibrium position when it is earning maximum money profits.

Having studied marginal revenue and average revenue in the previous chapter, we are now in a position to discuss the conditions of equilibrium of the firm. Here, we shall attempt only an analysis of the conditions of a firm's equilibrium in general and not with reference to any particular market forms. The firm's equilibrium conditions with particular reference to different market forms, i.e., under perfect competition, monopoly and imperfect competition, will be discussed in later chapters.

Fig. 12.1. Conditions of firm's equilibrium.

Notes

Before explaining a firm's equilibrium, we assume that the entrepreneur, i.e., the owner of the firm, is rational. The rationality on the part of the entrepreneur implies that he tries to maximize his money profits. This is a fundamental assumption in the theory of production and without this; the equilibrium of the firm cannot be easily explained. A corollary from the assumption of rationality is that whatever output the firm produces, it produces as cheaply as possible given the existing production techniques. We further assume, for the sake of simplicity, that the firm produces only one product. Our analysis would, however, remain valid also in case of multiple product firm. But when a firm produces two goods or more, certain other complications arise which we wish to avoid at this stage.

The equilibrium of the firm can be explained in two ways:

(*i*) With the help of total revenue and total cost curves, and

(*ii*) With the aid of marginal revenue and marginal cost curves.

12.2. Equilibrium of Firm: By Curves of Total Revenue and Total Cost

A rational entrepreneur will expand output if he thinks he can increase his profits by doing so and he will likewise contract output if thereby he can avoid losses and thus increase profits. He will be in equilibrium position at the level of output where his money profits are the maximum. In other words, he will then have no inducement either to expand or contract his output when he is earning maximum money profits. Now, profits are the difference between total revenue and total cost. Hence, the point where this difference is the maximum will represent the position of maximum profits and, therefore, of equilibrium.

A cost-revenue situation of a hypothetical firm is depicted in Fig. 12.2, where TC represents total cost curve and TR represents the total revenue curve. It will be noted that total cost curve TC starts not at the origin but at the height OF. This is so because it is assumed that even if the firm produces nothing (or shut down), it has to bear certain costs of production due to fixed factors. These are the fixed costs.

Break-even Point

From the Fig. 12.2, it is clear that at any output smaller than OL, total cost exceeds total revenue and the firm is having losses. At the output OL total cost equals total revenue and the firm is having neither losses nor profits. This point L is called 'Break-even point'. At the outputs larger than ON, the total revenue is less than total cost so that the firm is having losses. Point N is again a break-even point. Between OL and ON will lie the optimum point of maximum profits.

The maximum-profit will lie revenue-cost spread is the largest or in other words where the vertical distance between the total revenue and total cost curves is the greatest. The maximum profit point in our diagram is M where PP′ is the longest vertical distance between the two curves. Hence, at this point, the firm is in equilibrium position and is earning maximum profits PP′ by producing OM output. The maximum profit point will in fact be at that output where the slopes of the two curves are the same, that is to say, where the tangents to the total cost and total revenue curves respectively are parallel as is shown in Fig. 12.2.

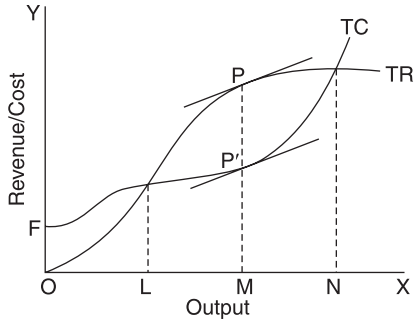

Fig. 12.2. Equilibrium of firm: total revenue and total cost.

Limitations

This way of finding out of point of maximum profits by total revenue and total cost curves is reasonable and is also often used by businessmen but it has some limitations:

First, maximum vertical distance between the total revenue and total cost curve is difficult to see at a glance. Many tangents have to be drawn before one reaches the appropriate one corresponding to the maximum profit point. Secondly, in this method, it is not possible to discover price per unit at various outputs at first sight. Total revenue has to be divided by total number of units produced in order to get the price per unit. For example, at the equilibrium output OM the price can be found by dividing MP by OM.

Owing to these limitations, complicated problems of equilibrium analysis cannot be discussed easily and clearly in this way of representing equilibrium of the firm. Modern economists, therefore, adopt a method which shows marginal quantities, i.e., marginal cost and marginal revenue at first sight.

Now, we turn to this second way of representing equilibrium of the firm.

12.3. Equilibrium of Firm: By Curves of Marginal Revenue and Marginal Cost

We know that a firm will be in equilibrium when it is earning maximum profits. We shall see presently that for a firm, to make maximum profits, two conditions are essential:

(*i*) Marginal Revenue (MR) = Marginal Cost (MC), and

(*ii*) MC curve cuts MR curve from below at the equilibrium point.

It is obvious that total profits can be increased by expanding output as long as the addition to the total revenue resulting from the sale of extra unit of output is greater than the addition to the total cost caused by producing an extra output. Now the addition to total revenue and total cost due to an extra unit of output are nothing else but marginal revenue and marginal cost respectively.

Thus, a firm will go on expanding output as long as marginal revenue exceeds marginal cost of production. If, at any output, marginal revenue falls short of marginal cost, i.e., if an additional unit of output adds less to total revenue than to total cost, the firm will contract output to avoid losses and thus increase its profits. The level of

Notes

output where marginal revenue and marginal cost are equal is the point of maximum profit.

Before this point of equality of marginal revenue with marginal cost is reached, the firm will be increasing its total profits by producing more as it is adding more to the total revenue than to the total cost. But if production is carried beyond this point of equality, the profits will start decreasing as the extra revenue will be smaller than the extra cost of production of a unit of output.

The whole argument can be explained with the help of Fig. 12.3 where MC is the marginal cost curve and MR the marginal revenue curve. AC and AR are the average cost and average revenue curves respectively. At the output OM, marginal cost equals marginal revenue (MR and MC curves intersect at E above this point). This represents the point of maximum profits and hence of equilibrium.

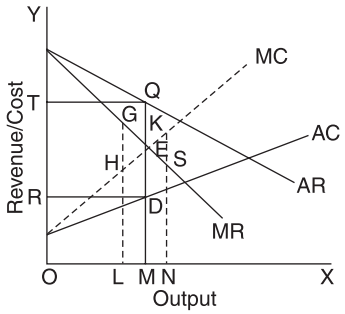

Fig. 12.3. Equilibrium of the firm: MR and MC.

At outputs smaller than OM, marginal revenue exceeds marginal cost and hence, there is scope for increasing profits by increasing output. For example, at output OL, marginal revenue is LG and the marginal cost is LH, and LG is greater than LH. It means that by producing the Lth unit, the firm is adding more to revenue than to its cost and, therefore, it will be profitable for it to produce the Lth unit.

Similarly, for every other unit till the Mth one, the marginal revenue exceeds marginal cost, and, therefore, the firm can increase its total profits by producing up to OM output. If the firm stops producing at OL, the units of output which could have added more money to the firm's revenue than to its cost would not have been produced and profits would have been smaller by the area GHE than they could have been. Thus, a firm has an incentive to produce up to OM level of output.

But if the output is increased beyond OM, marginal cost would exceed marginal revenue and the production of each additional unit beyond OM output would add more to total cost than to total revenue. For example, at ON output, the marginal cost is KN whereas the marginal revenue is SN and KN is greater than SN. Thus, production of more units than OM would involve losses, and reduce the total profits. Therefore, the firm would not like to produce beyond OM.

Hence, we conclude that firm's profits at OM output are the maximum and the firm is in equilibrium when:

Marginal Cost = Marginal Revenue.

This is one condition which is necessary but which is not sufficient for equilibrium.

In Fig. 12.3, the total profits earned by the firm in the equilibrium position can be easily found. At output OM, the average cost is DM while the average revenue is QM. Therefore, the profit per unit will be equal to QD and the total profits will be equal to the rectangle QDRT.

At an equilibrium position, the marginal cost curve must cut the marginal revenue curve from below. The condition that for a firm to be in equilibrium marginal cost must equal marginal revenue is no doubt a necessary condition but not a sufficient condition of equilibrium. For attaining equilibrium, a second condition must also be satisfied, viz., that the marginal cost (MC) curve must cut the marginal revenue (MR) curve from below at the point of equilibrium. This means that, beyond the equilibrium output, marginal cost must be greater than marginal revenue. If this condition is not met, a firm will not be earning maximum profits and hence will not be in equilibrium, as we shall see in the Fig. 12.4.

In Fig. 12.3, the point E (i.e., output OM) satisfies these second conditions also, as the MC curve cuts the MR curve from below at E and MC is greater than MR beyond E. It will be clearly not profitable, therefore, to expand output beyond OM. But there can be such a cost-revenue situation, which satisfies the first condition of MC being equal to MR but the second condition of MC cutting MR curve from below is not met.

In Fig. 12.4, MR is the straight line marginal revenue curve (as we have already seen, a straight line marginal curve is actually faced by a firm under perfect competition). MC is the marginal cost of the firm. At point T where MC and MR intersect, the marginal cost equals marginal revenue but from the figure it is clear that at T marginal cost curve MC is cutting marginal revenue curve MR from above and, therefore, marginal cost is less than the marginal revenue beyond the point T. Obviously, T cannot be a position of equilibrium since after T, marginal cost is less than marginal revenue and it will be profitable for the firm to expand output. At T or output ON, the firm instead of making maximum profit is making maximum losses. At point P in the same figure, however, marginal cost curve is cutting marginal revenue curve from below and marginal cost beyond the point P is greater than marginal revenue. Hence, if the firm expands output beyond P (i.e., OM output), it will be adding more to cost than to revenue clearly an unprofitable move. Thus, we conclude that in this figure, the point P, and not point T is the profit maximizing point. In this equilibrium position, the firm is producing equilibrium output OM.

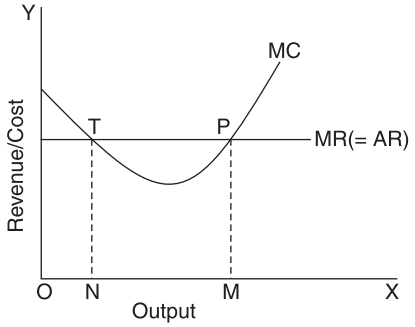

Fig. 12.4. MC cutting MR from below.

Similarly, point E in the Fig. 12.5 cannot be a position of equilibrium though

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MC equals MR at this point. This is because at E marginal cost curve is cutting the marginal revenue curve from E, both MC and MR curves are falling downwards, yet MC is falling more steeply than MR. Therefore, beyond E, MR is greater than MC. Hence, it will be profitable for the firm to expand output. Hence, E cannot be the position of the firm's equilibrium. For the firm to be in equilibrium, in Fig. 12.5(*a*) MC beyond E must rise upwards to cut the MR curve from below. If it does not rise upwards beyond E, then there can be no definite position of equilibrium in cost-revenue situation presented in Fig. 12.5(*a*).

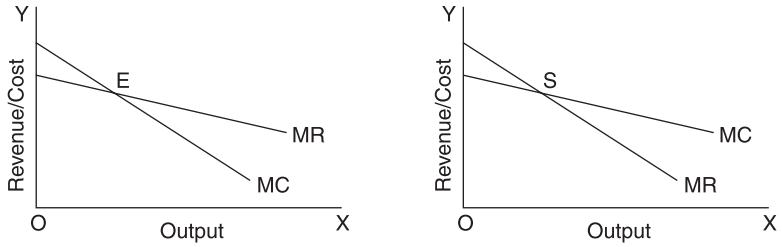

Fig. 12.5. Equilibrium when both MC and MR are falling.

It should be carefully noted that point S in Fig. 12.5(*b*) is really a position of equilibrium under the given cost-revenue situation. At S, MC equals MR and also MC curve is cutting MR curve from below. Although at S both MC and MR are falling downwards, yet MC is falling less rapidly than MR and, therefore, beyond S, MC is greater than MR. It will be unprofitable to expand output beyond S; nor will the firm move to the left of S, since it can increase its total profits by producing until S.

Tow Conditions

Thus, we repeat that for a firm to be in equilibrium position, two conditions must be satisfied;

(*i*) MC = MR; and

(*ii*) MC curve must cut MR curve from below at the equilibrium output.

These two conditions of equilibrium hold good both in the short-run as well as in the long- run. Whether the period is short or long, a firm aims at maximization of profits and the profits are maximized only when the above two conditions are satisfied. But there is one difference. In the short-run, it the short-run marginal cost curve and in the long-run, it is the long-run marginal cost curve which is relevant for comparing with the marginal revenue curve.

Again, these two fundamental conditions, viz., marginal cost being equal to marginal revenue and MC curve cutting MR curve from below, are valid whether a firm is working under perfect competition, monopoly or imperfect competition. The difference lies only in the shape of the marginal revenue and marginal cost curves. Under perfect competition, MR and AR curves are horizontal straight lines and they coincide, but under imperfect competition MR and AR curves are downward sloping.

12.4. Equilibrium of Industry

An industry is said to be in equilibrium when there is no tendency for it to increase or decrease its output. Now, it will have no tendency to expand or contract its output only when the demand for and supply of its product are in equilibrium. If,

for instance, the demand for its product exceeds the supply, the output is bound to increase. On the other hand, if the supply is greater than the demand for its product, the supply will have to be contracted to restore the equilibrium between demand and supply. Hence, equality between demand and supply for the product of industry is very essential if the industry is to be in equilibrium.

We know that the equilibrium of the firm does not determine the price under perfect competition. A firm operating under perfect competition has to accept the price prevailing in the market. But it is the equilibrium of the industry as a whole that determines the price under perfect, competition. This means that there must be equilibrium between demand for the product of the industry and the supply of that product by the industry. Hence, we may say that industry is in equilibrium at the level of output at which the quantity demanded and the quantity supplied of its product are equal.

12.5. Conditions of Equilibrium

We have said above that an industry is said to be in equilibrium when there is no tendency for its output to increase or decrease. Now the output of the industry can vary (*a*) by the expansion or contraction of output by the individual firms and (*b*) by the entry or exit of the firms. Thus, an industry would not be in equilibrium when the individual firms have incentive to change their output nor is there any tendency for the new firms to enter or the existing firms to leave it.

Thus, besides equality between demand and supply of industry's products, two conditions must be satisfied if there is to be the equilibrium of the industry.

(*a*) Each and every firm should be in equilibrium. This will happen, as already explained, at the output where marginal cost is equal to marginal revenue and marginal cost curve cuts the marginal revenue curve from below at the equilibrium point.

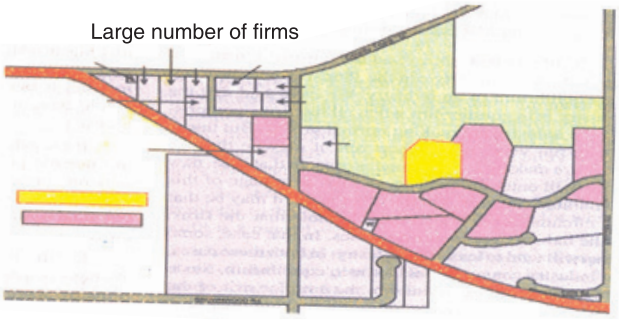

Fig. 12.6. Competitive industry.

(*b*) Industry as a whole should be in equilibrium, i.e., there should be no tendency for the firms either to move into or out of the industry. This will happen when all the entrepreneurs, i.e., owners of the firms in the industry, are earning only 'normal profits', that is, profits which are just sufficient to induce them to stay in the industry, and when no entrepreneur outside the industry thinks that he could earn at least normal profits if he were to enter it.

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Thus, the concept of normal profits is important in defining and describing equilibrium of the industry. If we assume that all the entrepreneurs in a certain industry have the same transfer earnings, there would be a fixed amount of normal profits for the whole industry. Every entrepreneur must earn at least this fixed amount of normal profits, if he is to stay in the industry.

If firms in the industry are earning profits above the normal, there will be incentive for the firms outside the industry to enter it. This is so because there is every reason for the entrepreneurs outside the industry to expect that they would be able to earn at least normal profits if they entered this industry. Thus, there will be a tendency for the number of firms in that industry to increase.

If, on the other hand, some of the firms in the industry are earning profits below normal (or when they are having losses), they will leave the industry and search for normal profits elsewhere. Thus, the number of firms in that industry will tend to diminish.

Thus, equilibrium of the industry or full equilibrium, as it is sometimes called, would be attained when industry as a whole is in equilibrium (i.e., there is no movement into or out of the industry) and also all the individual firms in it are in equilibrium, i.e., they are equating marginal cost with marginal revenue, and their MC curves cut MR curves.

Short-run and Long-run Equilibrium

We might distinguish between the short-run and the long-run equilibrium of an industry. We have said that the industry is in equilibrium when all the firms comprising the industry: are making normal profits. But this is a long-run view. In the short-run, it may be that the firms are making supernormal profits. In that case, new firms will enter the industry to take advantage of this favourable situation. On the other hand, it may be that the circumstances are so unfavourable that the firms in the industry are incurring losses. In that case, some firms will tend to leave the industry. In both these cases, the industry cannot be said to be in equilibrium. Since in the short-run, by definition, the entry or exit of the firms is ruled out, the condition of making only normal profits by the existing firms in the case of short-run equilibrium is not required. Hence, we can say that the industry is in short-term equilibrium (*a*) when the short-run demand for and the supply of the industry's product are equal and (*b*) when all the firms in it are in equilibrium, even though they may be making supernormal profits or having losses depending upon the demand conditions of the industry's product.

In the long-run, exit or entry of the new firms is possible. Hence, only normal profits will be made by the firms. Super-normal profits will be competed away by the entry of the new firms and, if there are losses, they would be eliminated by the exit of some of the existing firms. Thus, an industry will be in equilibrium in the long-run if the following two conditions are satisfied beside the equality between the long-run supply and the demand for the industry's product: (*a*) all the firms in the industry should be in equilibrium and (*b*) there should be no incentive to entry into the industry by the new firms or compulsion for the existing firms to leave it. In other words, the number of firms should be in equilibrium.

12.6. Incorporating Normal Profit Into Average Cost Curve

Notes

A firm's decision to stay or leave the industry will depend not only on whether it is covering average total cost as it is generally defined but also on whether it is earning at least normal profits. It is, therefore, useful to include normal profits in average cost. This inclusion of normal profits in average cost helps us to judge easily whether firms have a tendency to stay or leave the industry. If we do not include normal profits in the average cost, we shall have to compare the current level of earnings with normal profits which is an unnecessary complication.

If price is equal to average cost including normal profit of all the firms, it means that all the firms are making just normal profits besides covering average cost of production. We can then easily conclude that industry is in equilibrium as in this situation the firms would have no tendency either to enter or leave the industry.

If the price is greater than average cost including normal profits, it means that existing firms are making super-normal profits. This will induce new firms to move into the industry. This movement will continue until the super-normal profits are competed away.

On the other hand, if the price is less than the average cost including normal profits, it follows that firms are making sub-normal profits, i.e., having losses; therefore, some firms will be forced to quit the industry until the existing firms are at least covering average cost including normal profits.

In Fig. 12.7, we have drawn a curve ACP which represents average cost of production and does not include normal profits. If in ACP we add normal profits, we get AC curve which is the summation of the average cost of production and normal profits calculated per unit. The normal profits per unit will fall progressively as output increases. This is because a fixed sum of total normal profits will be spread over a progressively large number of units of output. Consequently, the vertical distance between ACP and AC = (ACP + NP) curve will steadily fall but the two curves will never meet. For instance, at the output level OM, the normal profit per unit is FG and at output ON, the normal profit per unit is RS. It should be carefully noted that rectangles showing normal profits such as EFGH and QRST would be of equal areas as we are assuming that normal profits represent a fixed sum of money.

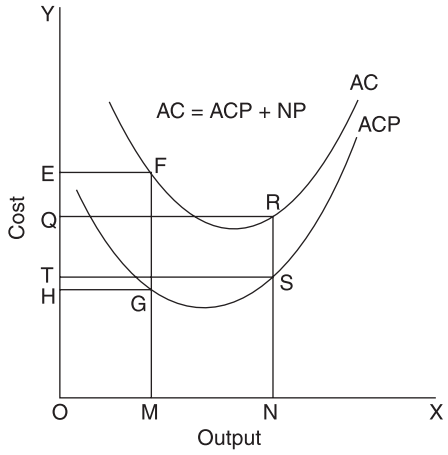

Fig. 12.7. Incorporating normal profits into AC.

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As already pointed out, it is reasonable to assume that there will be a fixed amount of normal profits in an industry. This normal profit is a fixed amount, (i.e. independent of the level of output) which the firms must earn if they are to remain in the industry. As the normal profits represent a fixed sum of money, it means that as output increases normal profits calculated per unit of output will fall as a fixed sum will be spread over a large number of units of output. This will be an additional reason for the average cost curve to slope downward over the low ranges of output.

12.7. Validity of Profit Maximizing Doctrine

We have seen in the analysis of a firm's equilibrium, that a producer is not interested in reducing either his average cost or total cost to the minimum or in maximizing his revenue. What he is interested really is in the difference between his total cost including normal profit and total revenue which is his profit. It is said that he wants to make this difference as big as possible. In other words, a firm seeks to maximize it profits. But is this assumption valid?

But let us be clear as to what we mean by profit maximization. The normal profits are minimum income which the entrepreneur must get if he is to stay in business. The normal profits are included in that cost and, therefore, do not come under the profit maximizing principle. Therefore, it is the super-normal profits, i.e., true or pure profits, which is the residual income of the entrepreneur, which he aims at maximizing.

There has been lot of controversy over this issue. There are economists who doggedly stick to this assumption and strongly assert that a firm exists and operates for no other purpose than to maximize profits. But there are others who question the validity of maximizing doctrine.

Meaning of Profit

We usually define profit in Economics as a reward for enterprise or for risk-taking or uncertainty bearing. But this definition does not lend itself to any quantitative interpretation to enable us to settle the issue.

There are two technical difficulties in interpreting the concept of profit maximization: The first difficulty relates to the time dimension. A businessman is said to maximize his profit for each accounting period, say a year. But this is not a good assumption, when dealing with a continuing business. Because a business can certainly increase its profits in a particular year by utterly neglecting the figure, e.g., clearing all the stock of finished goods at the end of the period.

The economist, therefore, as distinguished from the businessman, lays emphasis on the future in the concept of profits. According to this interpretation, profits may be defined as the maximum dividend that a company can pay without impairing its ability to pay same dividend in subsequent years.

The second difficulty about the concept of profits relates to the criterion for evaluating risk for which profit is a reward.

Leaving aside the dispute regarding the interpretation of the term 'profits', let us try to see whether the doctrine of profit maximization is a mere theory to be found

only in textbooks on Economics or whether the firms do actually try to maximize profits.

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Arguments

The following arguments are put forward to show that the assumption of profit maximization is amply borne out by business behaviour:

(*i*) The businessmen sometimes assert that it is their business to look after social welfare, rather than personal gain.

Thus, the actual behaviour of businessmen is in accordance with profit maximization doctrine.

(*ii*) The postulate of profit maximization certainly applies to industries and it is the behaviour of the industry, rather than of an individual firm which determines the flow of products and the demand for inputs.

Arguments Against

Those who question the validity of the profit maximization postulate put forward the following arguments:

(*i*) Enlightened businessmen vehemently deny that their object is to maximize profits. Service of society rather than personal profit is said to be their aim.

(*ii*) The profit-maximization doctrine would be the rule, if business decisions were taken by those who are to get the profits. Most business decisions are taken by business executives or salaried managers, rather than by owners of firms.

(*iii*) The objective of profit maximization is difficult. If a businessman is to maximize his profits, he must fix a price, so as to equalize marginal revenue and marginal cost. This means that he must be able to estimate demand at all prices and marginal cost at all outputs. This is a fantastically difficult task and is seldom attempted in practice.

(*iv*) Besides being difficult to calculate precisely, profit maximization is also regarded as immoral. "Profit maximization requires the businessman to use every trick he can think of to keep wages and fringe benefits down, to extract the last possible dollar from the consumer, to sell as low quality merchandise as he can legally hoodwink the customer into buying, to use income solely for the benefits of the stock holder, to disclaim any responsibility to the community, to wrangle the lowest possible price from his vendors regardless of its effect on them, and so on."

(v) The business policies and practices actually pursued by businessmen are not consistent with the profit maximization doctrine. The calculus of maximization does not fit the notions which actually sway businessmen. They are guided by a sense of fairness, adequacy, etc. They are satisfied with a satisfactory rate of profit instead of pursuing maximum profits.

Conclusion

Thus, profit maximization is unrealistic since it is difficult to calculate and not very ethical to pursue. Marginal analysis as a tool of profit maximization is a valid

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technique for selecting the most efficient technique out of the various alternatives available, where the alternatives can be clearly specified and where it is possible to estimate costs and revenue reasonably well. But this is not always possible.

We may conclude in the words of Robert Dorfman thus: "On balance, the maximization hypothesis is not as firmly grounded in the facts of life as a fundamental scientific hypothesis should be. But substantial and prolonged divergences from the behaviour it implies are rare particularly in industries with many participants. It, therefore, can still be entertained as a sound working hypothesis."

Full Cost Pricing Principle

For many years, Chamberlain's and Joan Robinson's price theory of monopolistic competition had come to be generally accepted. According to this theory, the firms were able to act automatically on the principle of profit maximization without fear of rivals' reactions. They fixed prices so as to maximize their profits and this they did by equating marginal cost to marginal revenue (MC = MR). But empirical studies made by Oxford economists under the leadership of professors Hall and Hitch (Price Theory and Business Behaviour) showed that the firms did not use the marginality rule (MC = MR) and that oligopoly was the main market structure in the business world. According to Hall and Hitch, the firms did not act automatically or irrespective of what their rival firms did. Rather they were continuously watching the reactions of the rival firms: The traditional theory could not adequately explain the oligopolistic interdependence.

In such a situation, the firms do not attempt to maximize short-run profits by acting on the marginality rule (MC = MR) but aim at maximizing long-run profit by acting on the average-cost principle. That is, the firms do not set their price and output at the intersection of MC and MR curves but they set them at a level which covers the average variable cost, (AVC) and average fixed cost (AFC) and normal profit margin in the business in question. Thus P = AVC + AFC + Normal Profit. Firms do not seek abnormal profits for fear of losing business to rivals, actual or potential. Hall and Hitch found that the firms are ignorant not only of their demand curves but also of their marginal cost, especially in multi-product firms. Rather they follow the full cost principle which gives them a 'fair profit' and covers the full cost of production. Hall and Hitch found that the firms' main concern is with price and not output as the traditional history implies.

Profit Maximization and Single Owner Entrepreneur

We have examined above one assumption underlying the traditional theory of the equilibrium of the firm, viz. profit maximization through the marginality principle (i.e., equating marginal cost with marginal revenue). We have shown that, according to Hall and Hitch, it is the fall cost principle rather than the marginal principle which is found to operate in the business world. The traditional theory also assumes that the firm on which profit is sought to be maximized is owned by a single owner-entrepreneur whose sole concern is to maximize profit. In modern business world, however single entrepreneur is an exception rather than the rule. It is the professional manager who actually controls the business because the dominating form of business organization today is a joint stock company. There is thus a divorce between

ownership and management. The single ownerentrepreneur was supposed to act with 'global rationality' and there were no time information or other constraints resting upon him from pursuing the single aim of profit maximization.

Obviously this assumption is unrealistic, because actually it is the manager who has the decision-making power. He may as well pursue goals other than profit maximization, e.g., social welfare, employees' welfare, stability and growth. The salaried also lack the motivation that a single ownerentrepreneur has for maximizing profit.

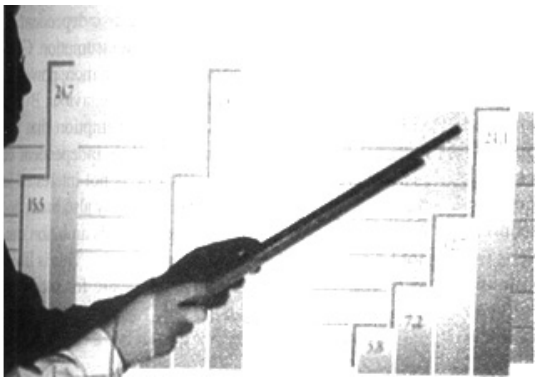

Fig. 12.8. Sales maximization.

Conclusion

The fact is that given the uncertainty in and complexity of the modern business world, lack of full and accurate information, the limited time and limited activity of the manager/entrepreneur and other constraints, the firms do not seek the maximization of profits, sales, growth or anything else. They at best try to exhibit satisfactory behaviour satisfactory profit, satisfactory sales, satisfactory growth etc. This is known as 'behaviourism'.

12.8. Goals Other Than Profit Maximization

We have discussed above the profit maximization principle. It gives the impression that every businessman aims at maximizing his profits regardless of all other considerations. This, however, is not so. On the other hand, in the world of reality, businessmen pursue several other goals. Among these we may mention security motive, sales maximization motive or utility maximization motive; we shall say a word about each.

Security Motive

It is said that when an entrepreneur fixes the price for his product, his aim is not to get maximum possible profit, but to satisfy his sense of security. In other words, he aims at getting a good income for many years to come so that he does not suffer from any sense of insecurity. This means that the entrepreneur's objective is to secure a steady flow of profit for a long time. Professor K.W. Rothschild observes in this connection. "Profit maximization has up till now served as the wonderful master-key that opened all the doors leading to an understanding of the entrepreneur behaviour. But there is another motive which cannot be lightly dismissed and which is probably

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of a similar order of magnitude as the desire for maximum profits; the desire for secure profits.

If we take the market structure into consideration, we might say that so far as imperfect competition and monopolistic competition with a large number of firms or absolute monopoly are concerned profit maximization seems to be a valid assumption. In the case of perfect competition, a firm has to accept the prevailing price and has no option, therefore, the question of profit maximization does not arise. In the case of monopolistic competition and absolute monopoly, the entrepreneurs are in a position to fix their price and maximize their profits. But in the case of oligopoly, profit maximization cannot be considered a valid assumption. The oligopolies have both the desire and the power to achieve a secure position. In such a market situation, therefore, the desire for security rather than the desire for maximum profit rules the entrepreneur's mind.

Sales Maximization

The sales maximization hypothesis has been put forward by Professor Baumol. In his view, maximization of sales rather than the maximization of profits is the ultimate objective that the entrepreneur pursues. He says that sales have become an end in themselves and not merely as a means to further other objectives like operational efficiency and profits. Baumol, therefore, regards sales maximization as the most valid assumption governing, the behaviour of a firm. By sales is meant the revenue earned by selling the product. Therefore, it is also called Revenue Maximization Hypothesis.

However, Prof. Baumol concedes that while promoting sales businessmen do not ignore altogether the goal of profits. He, therefore, modifies his position by saying that the entrepreneur promotes sales subject to the limitation that cost incurred are covered and a usual rate of return on investment is secured. Hence, according to Prof. Baumol, the objective is the sales maximization subject to minimum profit constraint. He says "So long as profits are high enough to keep stock holders satisfied and contribute adequately to the financing of company's growth, management will bend its efforts to the augmentation of sales revenue rather than to further increase in profits.

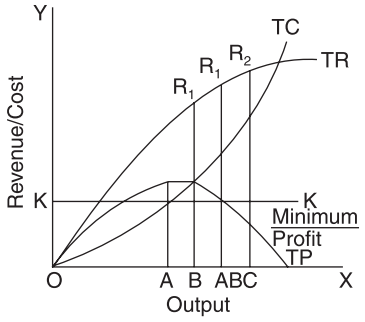

Fig. 12.9. Maximizing sales.

The diagram (Fig. 12.9) illustrates how, a firm aims at maximum revenue or sales consistent with earning minimum profit. This model is a compromise between total sales and profits. But it is also understood that after MR = MC, increase in

sales can only be at the expense of profits. This puts a limit to sales increase because minimum profits must be made.

Here TR is total revenue, TC is total cost and TP curve represents total profit. At the output OA, profits are maximum. But if the firm aims at only sales maximization, output will be OC which corresponds to R_2 at the top of TR giving maximum total revenue. But actually this firm will produce and sell OB corresponding to R, total revenue because it gives minimum profit.

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Utility Maximization

There are economists like Benjamin Higgins, Melvin Redder and Tibor Scitovsky who say that maximization of satisfaction or utility is the over-riding consideration which governs a businessman's behaviour. This goal is also called Preference Function Maximization. These economists point out that profit maximization does not necessarily result in maximization of satisfaction. In their view, we should not only consider the satisfaction that an entrepreneur gets from his material possessions which he may get from his profits, but also the satisfaction which he may get from the leisure that he is able to enjoy. The entrepreneur's attitude towards work and leisure is a very important consideration if the entrepreneur is to maximize his utility or satisfaction. According to this view, an entrepreneur would try to reach the highest possible indifference curve in order to derive the maximum possible satisfaction and this will happen where his net profits curve is tangent to indifference curve.

We may, however, add that to assume an entrepreneur's willingness to work as independent of his income seems to be an unrealistic assumption. Generally, it is the income motive which is a more powerful motive that sways the businessman's behaviour. But as Scitovsky has pointed out "The assumption that the entrepreneur's willingness to work is independent of his income need not imply that he is not interested in the materials rewards of his work. It may also mean that he is so keen on making money that his ambition cannot be damped by a rise in income. This is likely to be the case partly because the desire for success is more insatiable than the demand for the material goods and partly because it is not a high but a rising income that an entrepreneur tries to maximize his satisfaction or what he calls utility index rather than profits. He says that profit maximization is a condition of survival in perfect competition. But profit maximization motive is much weaker under the conditions of imperfect competition. There are three types of desires which in Higgins' opinion lead to non-profit maximization: (*a*) Desires and forces which lead the entrepreneur to produce at a point below the profit maximization motive, e.g., desire for leisure; (*b*) forces which lead the entrepreneur to produce at a point above the profit maximization output, e.g., desire to wield more power and enjoy greater prestige; and (*c*) forces which makes the entrepreneur stay where he is irrespective of the profit maximizing output. This may be due to his reluctance to make experiments.

Conclusion

We may, therefore, conclude by saying that there is not only one goal which the businessmen pursue, but there are several goals which they keep before them while running their business. Much depends upon the psychology of the businessman and the market environment in which he operates.

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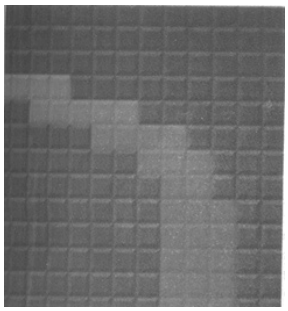

Fig. 12.10. Utility maximization.

12.9. Summary

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12.10. Review Questions

1. Explain the necessary and sufficient condition for the equilibrium of a firm.
2. "A firm is in equilibrium where its marginal revenue is equal to its marginal cost." Explain.
3. Examine the significance of the equality between marginal revenue and marginal cost in the theory of firm under different types of market conditions.
4. "All firms do not always aim at profit maximization". Explain.
5. Compare with the help of diagrams the equilibrium of the firm under perfect competition and under imperfect competition from the point of view of the most efficient utilization of resources.
6. "While under perfect competition, the individual firm can attain equilibrium only under increasing cost conditions, under monopoly it can be in equilibrium, whatever the cost condition." Discuss.

Unit–13

National Income and Circular Flow of Income

Notes

Structure

13.1. Introduction
13.2. What is National Income?
13.3. Economic Models
13.4. Circular Flow of Income
13.5. Summary
13.6. Review Questions

13.1. Introduction

Macro economics deals with the broad national aggregates like national income, national product, employment, consumption, investment, money supply, government budget, balance of payment etc. Of all these macro aggregates, national income and national product are the most significant aggregates. National income is considered as the most comprehensive measure of level of economic activity and index of economic growth of an economy. An understanding of the concept and measurement of national income is, therefore, essential in the study of macro-economics. This is what we propose to do in this and the following chapters. We begin this chapter by explaining the concept of national income in general. Secondly, we take up the circular flow of income to show how different sectors of the economic system are interrelated.

13.2. What is National Income?

National income is defined as the value of all final goods and services produced by the normal residence of the country or outside, in a year. National income is, a monetary expression of the current achievements of the people of a country expressed through their production activities. According to Dornbusch and Fischer, national income is the value of final goods and services produced by domestically owned factors of production within a given period.

There are several points worth noting in this definition of national income.

Monetary Expression

In the first place, national income is expressed in monetary terms. It adds together the value of all final goods and services produced in a country during a year. Since a vast number of diverse goods and services are produced in the economy, it is necessary when adding them to use some kind of common denominator. We cannot add together unlike items, such as apples and oranges, or hairpins and aeroplanes,

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or services of barbers and doctors since they are expressed in different units like kilograms and metres. Thus, in order to aggregate all goods and services it is essential to express them in money terms, such as rupees, dollar etc. Which is the common denominator? We can assign monetary value in terms of market prices or in terms of factor costs. As we shall explain later, national income is expressed both at market prices and at factor costs. However, at the general level here, we are expressing national income in terms of the market prices of goods and services. The output of different goods and services is valued at market prices, and the values are added together to give national income.

Final Goods and Services

The second point to be noted about national income is that it reflects the values of final goods and services. To understand this point clearly, let us differentiate between two types of products, viz. final products and intermediate products.

Final products are those goods and services which are sold to the final users during the year. These goods and services are purchased for final consumption by consumers and for investment by producers, and not for resale. All consumer goods and services like food items, refrigerators we buy for the consumption of our family are final goods. Purchases of capital goods like machines, buildings are also final goods. Producers buy these capital goods for their own use (as investment) and not for resale. Thus, final goods are meant for final use by consumers and producers. They are finished goods for final consumption and investment.

Intermediate products are those goods and services which are used by the producers as inputs into a further stage of production. These goods move from one stage of production to another in the production of a final product. These are the products which are purchased by producers from other producers and are resold after converting them into final goods. For example, seed, fertilizers, etc. purchased by farmers are intermediates products. Farmers grow wheat, rise and other crops by using these intermediate products. When the farmers sell wheat, rice etc., they recover the cost incurred on these intermediate products. It is tantamount to selling of these intermediate products.

To measure national income accurately, all goods and services produced during a year must be counted once, but not more than once. Most products go through a series of production stages before reaching the market. As a result, components of more products go are bought and sold many times. For example, flour mills sell flour to bakeries, and bakeries use this flour in making bread which is sold to households. How should we treat such intermediate products in computing national income? The answer is that national income includes only the value of final goods and services. Intermediate products are excluded from national income because their value is already included in the final products in which they are used. For instance, since flour is used in making bread, the total values of bread includes the values of flour also. If we add the value of flour to the value of bread, the value of flour would be included twice. To add intermediate goods to the final goods would be double counting—that is, the flour would be counted more than once. National income includes the value of bread and not of flour used in making bread. Hence, national income is the total value of final goods and services produced.

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Flow

National income is a flow concept. It is the flow of goods and services. A flow is quantity which is measured over a period of time. Nationa income is a very important flow variable in economics. It tells us how many rupees worth of goods and services are flowing in the economy per unit of time. Conventionally, national income is expressed over one year. It is in this sense we say that national income of India in 2001 to 2002 was ₹ 12,58,800 corers.

Current Output

Another point to be noted about national income is that it measures the value of currently produced goods and services. It excluded pure exchange transactions such as sale and purchase of secondhand goods or used goods, purchase and sale of securities and transfer payment. These transactions are excluded from national income because nothing new is produced in the current year.

The reason for excluding second-hand sales i.e. sale of used goods, from national income is fairly obvious. Such sales do not reflect any current production whereas national income relates to current production only. For example, if I sell my second-hand car, this transaction would not be included in national income because no current production is evolved. When this car (as a new car) was originally produced and it was purchased by me, its value was included in that year's national income. On the same token, we count the construction of new houses as part of national income, but we do not add the sale of existing (old) houses. However, the value of the services of the commission agents involved in the second-hand sales are included in the national income of the current year as these services are rendered in the current year itself. These commission agents or brokers provide current services in bringing buyers and sellers together, and these services are rightly a part of current output.

Sale and purchase of financial assets (both old and new) like bonds and shares are also excluded from national income because these transactions do not directly involve current production. They are not payments for goods and services. They represent transfer of purchasing power and the ownerships rights from one person to another. Thus, if you purchase shares of a company, you get ownership rights over a part of company's resources. However, the services of the share brokers are included in national income as these services are rendered in the current year.

The reasoning applies to transfer payments, such as social security payments (pensions etc.) donations and gifts. Transfer payments are received by households, enterprises and others without making any corresponding contribution to the production process in the current period. They are unilateral payments for which no productive services are rendered in the current period. The recipients of these transfer payments do not make any contribution to current production of goods and services. They only bring about a transfer in the purchasing power. For instance, old-age pensions from government to its employees transfer money from government to its employees without any output being produced in the current year.

Residents and Domestic Territory

National income is defined as the value of final goods and services produced by the normal residents of a country. Normal residents are those persons who ordinarily

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reside in a country in which they live and whose economic interest lies in that country. They may or may not be the citizens of that country, i.e., normal residents include national, as well as foreign nationals. These normal residents of a country produce goods and services by selling their factor services to production units located within and outside the domestic territory of a county. Domestic territory refers to the geographical or political boundary of a country excluding foreign embassies of this country located outside its geographical territory. The money value of final goods and services produced by the production units located within the domestic territory of a country is called domestic product.

National income is the money value of final goods and services produced by the normal residents of a country operating within and outside the domestic territory of a country during a particular year. It is the value of final goods and services produced by all production units located within the domestic territory of a country plus net factor income received from abroad. This will become clear later when we explain various national income aggregates and different methods of measuring national income.

Finally, it is necessary to guard against confusing national income with the sum total of individual personal incomes. National income is not the sum total of personal incomes. Personal incomes include transfer incomes also, and transfer incomes are excluded from national income. Furthermore, not all of the national income accrues to individuals as their personal incomes due to undistributed profits, savings of the governments, etc.

13.3. Economic Models

In order to explain economic events and functioning of the economy, economists use models. An economic model is an explanation of how the economy works. Economic models are simplification of the real world. A model is based on a set of assumptions to simplify the economic events and problems that economists want to explain.

There is an old joke on how economists sometimes use assumptions to oversimplify the problems they face. The joke goes like this:

A chemist, a physicist and an economist were trapped on a desert island, trying to find out how to open a can of food. Let us heat the can over a fire until it bursts said the chemist.

No, no, said the physicist. Let us throw the can on the rocks from the top of a high tree.

I have no idea, said the economist, let us assume we have a can opener.

However, good economists do not build models on the basis of unrealistic assumptions. A good model is based on a set of assumptions that are reasonable and somewhat realistic. Moreover, a good model is simplification of reality, but while doing this it concentrates on the most important phenomena and omits details that are relatively unimportant. Such a model is useful because is explains reality reasonably well. Just as an architect constructs a model of a building which is a simplification of the actual building, so too an economist constructs a model of the economy to illustrate particular features of the economy.

We have used such a model in this chapter to explain the circular flow of income so that we can understand the interactions among different sectors of the economy in a simplified way.

13.4. Circular Flow of Income

Notes

We have explained earlier that the basic concept of micro economics is the individual market. However, the basic concept in macro economics is the circular flow of income. In an economy, people are engaged in carrying out various economic activities like production, exchange and consumption. While carrying out these activities, they are involved in making various transactions with each other. This gives rise to inter-dependence between them. This interaction and inter-dependence is called the circular flow of income.

Meaning of Circular Flow of Income

As we know, national income is a flow concept. Every year a large number of goods and services are produced which give rise to national income. These goods and services are produced in the production units by combining different factors of production. Producers purchase the factor services to produce goods and services. The national income or output generated is distribution as factor income to the owners of factors of production in the form of wages, rent, interest and profits. Those who receive this income spent it on goods and services produced by production units. The income earned or generated are spent on purchase of goods from these production units. As such, production gives rise to income, income gives rise to expenditure and expenditure gives rise to income again. Thus, in the economy, goods services and factor services are being constantly exchanged between different individuals like producers and households. This flow of goods and services and factor services among producers, households and other individuals in the economy is known as circular flow of income. Thus, circular flow of income is defined as the flow of payments and receipts for goods and services and factor services between different sectors of the economy.

This flow of national income is circular is nature. There is a constant flow of income and expenditure among different sectors of the economy. Incomes are created in the production units in the process of production. Income flows for production units in the form of factor payments to households and then from households to production units. In this way, income flows in circular way among different sectors of the economy. Goods and services flow in one direction and money payments to acquire these flow in the opposite direction, thereby leading to a circular flow. It is called circular because it goes on continuously and indefinitely in a circular way; it has neither any beginning nor any end.

Economic transactions like sale and purchase of goods and factor services generates two kinds of flows, viz. flow of goods and services and money flow. Accordingly, circular flow of income can be viewed from two different angles ; real flows and money flows.

Real flows: Real flow of income consists of flow of factor services from the owner of factor services to the producers and flow of goods and services from the producers to the buyers of these goods and services. Thus, real flow consists of

Notes

flow of factor services and flow of goods and services among different sectors of an economy.

Money flows: In the modern monetized economies, economic transactions involve the use of money. Flow of factor services generates factor income in the form of money. Buyers of goods and services pay in cash for goods and services purchased. Money flows comprise of these flows of money payments. Thus, money flow consist of flow of money incomes for factor services, such as money wages, rent, interest etc. and money expenditure incurred on the purchase of goods and services.

In fact, real flows and money flows are two sides of the same coin. Real flow of goods and services is matched by an equal but reverse money flow. For instance, if a labourer sells his labour service to a producer and thereby earns a wage income of ₹ 5,000 a month, there will be a money flow of ₹ 5,000 in the form of factor income from the producer to the labourer, and at the same time the flow of labour service of the same value from the labourer to the producer. The same is true for the entire economy. National income is both a flow of goods and services and flow of money incomes. The circular flow of income involves the basic principle that expenditure of the buyer creates income for the seller by the same amount. Accordingly, flow of goods and factor of services (i.e., real flows) from the seller to the buyer creates the income or money flow from the buyer to the seller.

Economic Sectors of an Economy

To illustrate and explain the circular flow of income in an economy in a convenient way, the economy is divided into four sectors : (*i*) household sector, (*ii*) business sector i.e., the firms, (*iii*) government sector, and (*iv*) foreign sector.

Household sector: Households are the main owners of factors of production - land, labour and capital. They sell the services of these factors of producers and in return receive their income. They spend a large part of their income in purchasing goods and services from the producers. However, they save a part of their income and at the same time they pay taxes to the government out of their income.

Business sector or firms: In economics we use the terms business sector, producers and firms interchangeably. Firms hire services of factors of production from households to produce commodities that they sell to households, to other firms, to government or to other countries. Firms are the principal buyers of factors of production and main producers of commodities. Business sector comprises of both private and government enterprises.

Government: Government is taken in the sense of general government so as to exclude government enterprises. General government gets its income largely from taxes imposed on households and business sector in the form of direct and indirect taxes. It buys goods and services from the producers and factor services from the households. It uses these commodities and factor services in providing free services, such as police, education, medical facilities, sanitation facilities, judicial services etc. to the people so as to satisfy their collective wants.

Rest of the world: Different sectors of the economy have transactions not only with each other, but also with foreign countries, i.e., rest of the world. A country exports goods and services to other countries and similarly it imports goods and

services from other countries. In the same way, factor services move across the border of a country and the firms of this country may purchase the factor services from other countries.

In order to study circular flow of income in a simplified way, we combine the above-mentioned four sectors to make the following three models of circular flow :

Notes

(*i*) Two-sector model consisting of the household and the business sectors.

(*ii*) Three-sector model comprising the households, business and government sectors, known as closed economy model and

(*iii*) Four-sector model consisting of households, business and government sectors and the rest of the world, and known as open economy model.

These three models of circular flow of income are studied here in detail.

Tow-Sector Model Without Saving

To understand the basic essence of circular flow of income, we begin with a simplified two sector model consisting only of households and firms (production units). Thus, we are imagining a hypothetical economy where there is no government and which has no relation with rest of the world. In such an economy the household sector owns all the factors of production. This sector sells the factor services to the firms and receives income from them in the form of wages, rent, interest and profits. The money payments made by firms to households are cost-expenditures for the firms and factor incomes for the households. Firms or the production units use the factor inputs to produce goods and services which are sold to the households. The household sector pays for these goods in the form of money and thereby firms receive money payments from the household. The interaction of firms and households takes place in two sets of markets—factor markets and product markets. Factor markets are those markets where factor services are bought and sold. Product markets and goods markets are the markets where goods and services are bought and sold.

The circular flow is better understood by referring to Fig. 13.1 showing the money and real flows in a two-sector economy. In the upper loop, the factor service flow from the households to the firm is indicated by the arrow mark. This is the real flow, in return, money flow from firms to households as factor incomes (is indicated by a dashed arrow). This is the money flow. Flow of factor services from households to firms gives rise to a reverse money flow from firms to households. Factor services are sold by households through factor markets. This leads to a flow of money income from firm to households. In the lower loops, goods and services produced by the firms flow from the firms to households as indicated by the arrow mark. This is the real flow. The households pay for these goods and services in money which creates money flow, indicated by a dashed arrow. Note that flow of goods and services from firms to households gives rise to money flow in the opposite direction from households to firms. Goods and services are sold by firms through product markets. This leads to flow of payments from households to firms.

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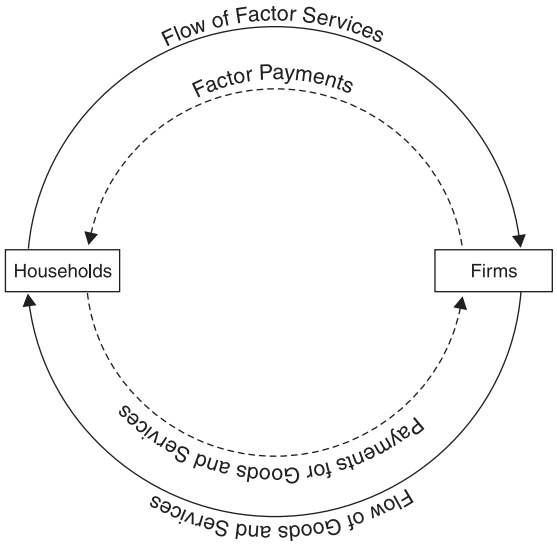

Fig. 13.1. Two sector models without saving.

The outer circle represents the real flows (indicated by solid line) and the inner circle represents money flows (indicated by dashed line). Real flow consists of flow of factor services from households to firms and flow of goods and services from firms to households. Money flows comprise of flow of factor incomes from firms to households and flow of money expenditure on goods and services from households to firms. By combining both types of money flows we find a circularity in the money flows. The money payments go around in a circular manner (as shown by the continuous dashed arrows). In the same way we get the circular flow of goods (real flow) by combining both types of real flows.

In the two sector model, if households spend all their incomes on buying consumer goods produced by firms, and firms distribute all the money collected from the sale of their products to households as factor income, then the circular flow of income will remain constant. As the households spend all their income on the purchase of goods and services from the firms, total money receipts of the firms will be equal to the total income of the households. Similarly, total income of the households is equal to the expenditure of the firms on the purchase of factor services. Everything received by households would be passed on to the firms, and everything received by firms would be passed back to households. The circular flow of income will continue to operate at unchanged level. In other words, there would be equilibrium in the circular flow of income.

Two-Sector Model with Savings and Investment

In the foregoing analysis of circular flow of income in the two-sector model we have assumed that there is no saving either by the households or by the firms. We have assumed that household sector spends the entire income on the goods produced by firms and firms distribute all their receipts to the households as factor incomes. However, in reality households do not spend all the income on consumption. Instead, they save part of their income either for old age or to meet expected expenditure like marriage of their children, etc. A part of income which is not spent by households on consumer goods and services, is called savings. Similarly, firms may not distribute

all their receipts to households as factor income, rather they may save a part of their receipts in the form of depreciation provisions and undistributed profits which may be used for undertaking investment. How do we illustrate savings and investment in our model of circular flow of income?

Notes

To keep our analysis simple, we assume that all savings are made by the households. The act of saving by the households reduces the consumption expenditure and thus the circular flow of income. Households receive income from firms and pass back only a part of it through consumption expenditure since part of the income is saved. Saving thus represents a sort of withdrawal or leakage of expenditure from the circular flow of income between households and firms. Withdrawal or leakage is the amount of money which is withdrawn from the flow of income. It reduces the flow of income in the country.

However, savings may be used for undertaking investment expenditure. Investment refers to expenditure on goods which help in producing other goods in the production process. Expenditure on plant, machinery, etc. are example of expenditure. These capital goods are not purchased by the consumers, rather they are purchased by the firm only. In an economy, both consumer goods and capital goods are produced. In our simplified model, we have assumed so far the production of consumers goods only. Now we expand our model to incorporate capital goods. Firms produce two types of goods now. The first types of goods are consumer goods, which are sold by the firms to the households. The second type of goods are capital goods (or investment goods), which are sold by the firms that produce them to the other firms that use them.

Now consider the effect of investment. Investment expenditure creates income for the firms that produce capital goods and for the factors used in production of these goods. This income does not arise from the expenditure of the households, rather it is over and above the income that arises from the households expenditure. Investment expenditure thus results in an addition to the circular flow of income, and as a result the level of income rises. Thus, investment expenditure is an injection into the circular flow of income. An injection is the amount of money which is added to the flow of income. It increases the flow of income in an economy.

How do the firms obtain the required funds for undertaking investment? The firms may use part of their profits (i.e., undistributed profits) for undertaking investment. To simplify our analysis we assume that firms do not retain anything as undistributed profit since the entire income is distributed among households as factor incomes. This implies that investment undertaken by firms is financed through savings of the households. To some extent the firm may borrow directly from households. However, households and firms interact with each other through financial institutions (capital market) like banks, insurance companies, mutual funds, etc. Financial institutions intermediate between saver and investors or lenders and borrowers. In our simplified model, we assume that whatever is saved by the households is deposited with the financial institutions (capital market) and the firms take loan from these financial institutions to undertake investment. Households are the net lenders as they save part of their income. Firms are net borrowers since they borrow funds to undertake investment. Thus, savings of the household sector flow to the firms in the form of investment through the medium of capital market.

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Circular flows of income in a two-sector model incorporating saving and investment is illustrated in Fig. 13.2.

In Fig. 13.2 a new sector known as capital market has been added. Now a part of income of the households flows to firms in the form of consumption expenditure and a part of the income flows to capital market in the form of savings as indicated by the dashed line labelled S. These savings flow to the firms through the capital market to finance investment by firms. The investment flow is shown by the dashed arrow labelled I.

It is important to note that there would be equilibrium in the circular flow of income if the investment expenditure by the firms is equal to the savings of the household sector. As explained above, saving is a leakage from the circular flow of income as a result of which circular flow of income falls. Investment, on the other hand, leads to increase in the circular flow of income. Equality between savings and investment (S = I) means that concretionary effect of saving on the level of income is just equal to expansionary effect of investment on the level of income. Thus, equilibrium condition of circular flow of income is:

$$S = I$$

However, investment is undertaken by the firms, while savings are done largely by households. Therefore, savings and investment in an economy need not necessarily be equal. Whenever savings exceed investment (S > I), the income flow declines. Excess of saving over investment implies that whatever income leaks out from the circular flow in the form of savings is not neutralized by an equivalent injection if the form of investment exceeds savings (I > S), the income flow increases. Excess of investment over savings implies that whatever income leaks out from the circular flow of income in the form of savings is more than neutralized by an injection in the form of investment. This pushes up the level of income in the economy.

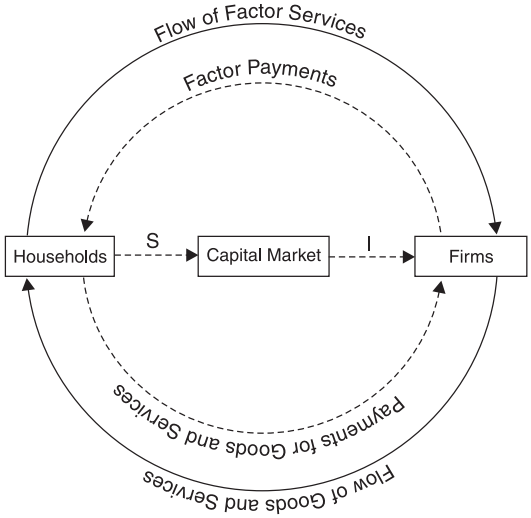

Fig. 13.2. Two sector model with saving.

Three-Sector Model of Circular Flow of Income: Model with the Government Sector

We have explained the nature of circular flow of income by looking into the

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primary flow of income between households and firms. Now we expand our model of circular flow of income by adding the government sector to the two-sector model. A three-sector model comprising of households, firms and government is a more realistic model because government performs a wide variety of economic functions in a modern economy. Therefore, there is a need of including the activities of the government in the circular flow of income. To keep our analysis simple, we will include three major activities of the government in the circular flows, viz. (*i*) taxes, (*ii*) government spending on commodities and factor services, and (*iii*) transfer payments.

The government imposes taxes both on households and firms. It levied taxes on households in the form of personal taxes and commodity taxes. Income tax on individuals and indirect taxes like sale taxes, excise duties on consumer goods are some of the important taxes levied on households. Thus, a part of the households income flows to the government in the form of taxes. The government imposes taxes on the firms as well. Corporation tax is the most important tax falling in this category. Therefore, a part of the firms earning is taxed away in the form of corporate tax. This gives rise to income flow from firms to the government. Thus, income flows from households and firms to the government in the form of taxes.

The government spends the money collected through taxes to discharge various functions in the economy, such as administration, law and order, etc. The government spends a part of its tax revenue in purchasing factor services from households and making payments to them in the form of wages and salaries. The government incurs expenditure in buying a whole range of goods and services from the firms and make payments in turn. Thus, the government buys factor services from households and goods and services from the firms. Accordingly, income flows from the government to households and firms in the form of government expenditure on factor services and commodities.

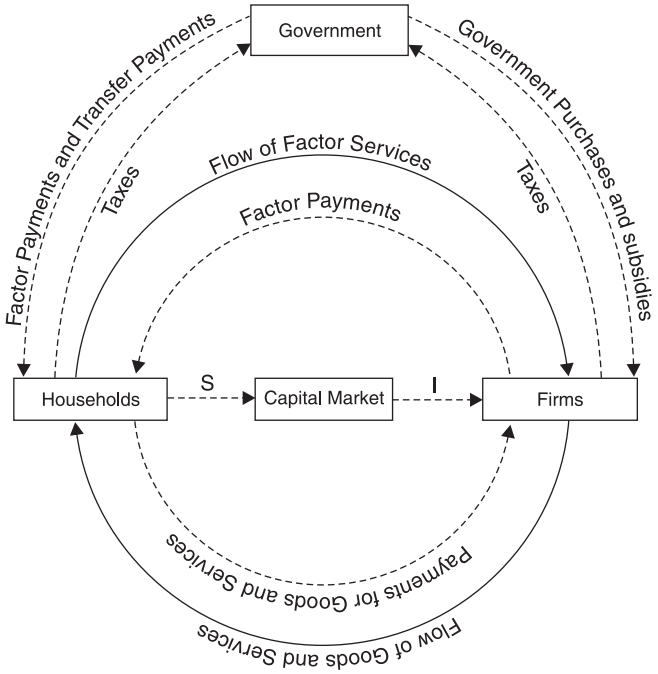

Fig. 13.3. Three sector model.

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The government incurs expenditure in the form of transfer payments as well. The government undertakes various social securities and welfare schemes in every economy. Expenditure incurred on these schemes are called transfer payments. Old-age pension, unemployment allowance, scholarships are examples of transfer payments received mainly by the households. Similarly, government gives subsidies and makes transfer payments to firms in order to encourage production. Fertilizer subsidies and food subsidies are such transfer payments. Transfer payments are unilateral payments for which no real services are rendered in return for them. Accordingly, in case of these transfer payments, there is a flow of money payments from government to household and firms, but there is no reverse real flow.

The circular flow of incomes and expenditures in a three-sector model is shown in Fig. 13.3. This figure shows the primary money flows and real flows between households and firms. However, the figure presents only the money flow between the government and households as well as between government and firms. The corresponding real flows from and to the government have not been shown to avoid overcrowding in the diagrams.

Taxes constitute leakages from the flows because they reduce the income and, therefore expenditure of the households and firms. On the other hand, the government expenditure is injection in the flows because it adds to the aggregate demand in the form of government purchases of factor services from the households and goods and services from the business sector. Similarly, the transfer payments by the government are injection in the circular flows. Thus, the government may affect the level of circular flow of income through its activities of imposing taxes, incurring expenditure and making transfer payments. However, if the government spends its entire income (received in the form of taxes from households and firms) in the form of expenditure and transfer payments, there would be equilibrium in the circular flow of income.

Four Sector Model of Circular Flow of Income: Model with the Foreign Sector

So far the circular flow of income has been shown in the case of a closed economy. A closed economy is an economy which does not engage in international trade. But the actual economy is an open economy where foreign trade plays an important part. Therefore, we need to include the rest of world sector in our model to make it a realistic model. A four sector model comprising households, firms, government and rest of the world is known as an open economy model.

Circular flow of income in an open economy is explained with the help of a flow chart as shown in Fig. 13.4 like Fig. 13.3, this figure also show only the money flow so as to avoid crowding in the diagram. It needs to be borne in mind that each flow has its counterpart real flow in the opposite direction. The lower loop of this figure shows circular flow of income in respect of foreign trade.

Interaction between the domestic economy and rest of the world takes place through flow of goods and services (international trade) and flow of factor services. The household sector buys goods imported from abroad and makes payment to the foreign sector. On the other hand, the households sector receives foreign remittances in foreign exchange by selling some of the factor services abroad. For example, some of the Indian people may be working abroad and they may remit income to

their families in India. Thus, there is outflow of expenditure from households to the foreign sector to pay for the imported goods and inflow of income for the services rendered by them in foreign countries.

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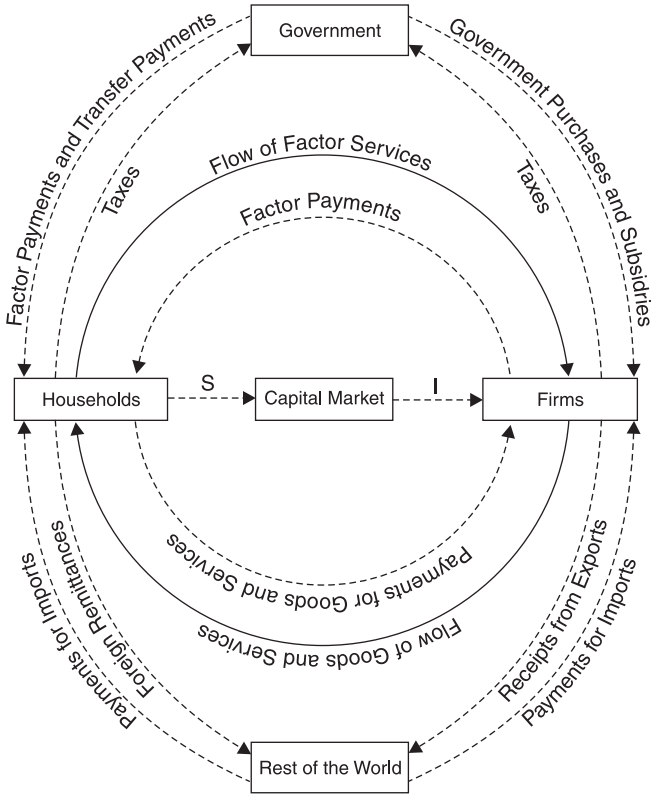

Fig. 13.4. Four sector model.

The business sector exports goods and services (like shipping, insurance, banking etc.) to foreign countries and receive payment in the form of receipts from exports. On the other hand, the business sector makes payments to the foreign sector for import of goods and services. This is the flow of expenditure out of the economy. Like the business sector, modern governments also export and import goods and services from foreign countries. However, for the sake of simple analysis, we have not illustrated it in the diagram. Similarly, there is inflow and outflow of capital services which are not shown in the diagram for simplified analysis.

Inflow and outflow of income affect the level of circular flow of income. If the inflow of income is equal to the outflow of income, the level of circular flow of income would remain unaffected, i.e., there would be equilibrium in the circular flow of income.

Importance of circular flow of income

The circular flow of income is the basic concept in macro economics. Importance of circular flow of income is evident from the following factors:

1. The entire economic system can be viewed as circular flow of income and expenditure. Circular flow of income shows how different sectors of the economy, namely, householdsector, producing-sectors, government-sector and rest of the world-sector are interrelated and inter-dependent,

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circular flow of income gives an overview of interaction between different sectors of an economy.

2. The magnitude of these flows determines the size of income. We can, therefore, measure national income from the money flows.
3. The study of circular flow of income pinpoints the conditions of macro economic equilibrium. It spells out the conditions for equilibrium level of income in an economy, for instance, equality between saving and investment is the equilibrium condition in a two-sector model.

13.5. Summary

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13.6. Review Questions

1. Distinguish between:
   (*i*) "Gross Domestic Product" at market prices and "Net Domestic Product" at factor cost.
   (*ii*) "Gross National Product" at market prices and "Net National Product" at factor cost.
   (*iii*) "Net National Product" at market prices and "Net Domestic Product"at market prices.
   (*iv*) Factor income and transfer payments.
2. Differentiate between:
   "National Disposable Income" and "Personal Disposable Income"
   "Private Income" and "Personal Income".
3. Distinguish between national income at current prices and national income at constant prices.
4. Show the relationship between the following:
   "Net National Product" at market prices and "Gross Domestic Product" at factor cost.
   "Gross Domestic Product" at market prices and "Gross National product" at factor cost.
5. Show how "Personal Income" and "Personal Disposable Income" are interrelated?
6. What are transfer payments? How do they differ from factor payments? How are they treated in the estimates of national income?
7. Define "Gross Domestic Product" at market prices and "Net National Product" at factor cost. Bring out their relationship.

8. Define "Private Income" and "Personal Disposable Income". How are the two related?
9. Explain any three national income aggregates. How are they related to each other?
10. Complete the following equations:
    (*i*) GNP = NNP + ...
    (*ii*) NNP = NDP + ...
    (*iii*) $GDP_{MP} = GDP_{FC}$ + ...
    (*iv*) GDP = NDP + ...
    (*v*) National Income at Factor Cost = National Income at Market Price
    (*vi*) DPI = PI – .....
11. Complete the following equations:
    (*i*) Net factor income from abroad = GNP_{FC} .....
    (*ii*) Net indirect tax = Indirect taxes – .....
    (*iii*) $NDP_{MP} = GDP_{MP}$ + ...
    (*iv*) $GNP_{MP} = GNP_{MP}$ – .....
    (*v*) Personal Income = Personal Disposable Income + ...

Notes

Unit–14

Measurement of National Income

Notes

Structure

14.1. Introduction
14.2. Three Ways to Measure National Income: An Overview
14.3. Net Product or Value Added Method
14.4. Income Method
14.5. Expenditure Method
14.6. The Identity of Output, Income and Expenditure
14.7. Significance of the Three Methods
14.8. Difficulties in Measurement of National Income
14.9. Summary
14.10. Review Questions

14.1. Introduction

National income is often considered as the most comprehensive measure of how well the economy is performing. It is necessary and important, therefore, to measure national income of a country so as to have an idea of the performance of the economy. Measuring national income is an extremely complicated and gigantic task. However, economists have devised various ways of estimating national income. In fact, national income estimates are made in every country these days. In India, the task estimating national income is entrusted with the Central Statistic Organization (C.S.O.), a department of Ministry of Planning and Programme implementation. In this chapter, we examine how economists measure a country's national income that is generated from production. While measuring national income it is important to keep in mind that national income is taken in the sense of 'net national product at factor cost (NNP_{FC}). However, while estimating NNP_{FC} we would first be required to estimate the gross domestic product (GDP).

Just as doctors take a patient's temperature to find out how sick the patient is, economists use national income statistics to get a quantitative measure of the economy's performance. It is important to know how economists measure a country's national product and national income that is generated from this. However, measurement of national income has always posed problems. It goes to the credit of Simon Kuznets that he has solved many of these measurement problems. In acknowledgment of this contribution, one of the first Nobel Prizes in economics was given to Simon Kuznets.

14.2. Three Ways to Measure National Income: An Overview

We know, in the production process in an economy goods and services are produced by the combination of factors of production. Goods and services produced are distributed as factor incomes to the owners of factors of production. The income earned or generated is spent on the consumer and capital goods. Thus, production gives rise to income, income gives rise to expenditure and expenditure gives rise to income again. Put in terms of circular flow of income, we can distinguish three successive stages or phases of the circular flow:

(*i*) Production of goods and services by producers with the use of productive resources,

(*ii*) Distribution of incomes to the owners of productive resources, and

(*iii*) Expenditure of incomes on the purchase of final consumer and capital goods.

These three phases of production, income and expenditure are shown in Fig. 14.1

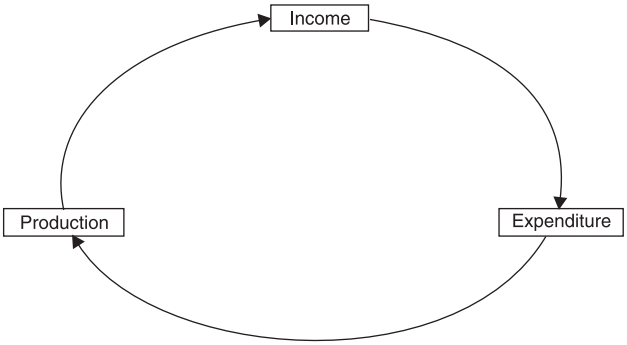

Fig. 14.1. Phases of circular flow.

Corresponding to these three phases of circular flow of income—production, income and expenditure—national income of a country can be viewed in three ways: as a flow of goods and services produced, as a flow of income generated and as a flow of expenditure on goods and services. Accordingly, there are three different ways or methods of measuring national income:

1. Net Product Method or Value Added Method
2. Income Method
3. Expenditure Method.

These three different ways of measuring national income are three different points at which the flow of income round the whole circuit of circular flow of income is measured. All the three methods give the same measure of national income but they refer to conceptually different activities in the economy and provide different ways to look at national income. Therefore, each method is important in its own way.

These three methods of measuring national income are now explained in detail.

14.3. Net Product or Value Added Method

The net product or value added method measures national income as the sum

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total of net final output produced or net value added by all the producing units in an economy during a year.

Value added method involves the following steps:

1. Identifying production units and classifying them into industrial sectors
2. Estimating the net final output or net value added by production units

3. Estimating net domestic output

4. Estimating net factor income from abroad so as to arrive at net national product at factor cost or national income.

We discuss these steps in detail.

Step 1: Classification of Production Units

The net output method requires that national product should be measured industrywise. Therefore, as the first step, the production units are classified into certain groups knownas industrial sectors. All the production units in an economy are generally classified into the following three broad industrial sectors on the basis of the nature of production process:

(*i*) *Primary sector:* Primary sector includes all those production units which produce commodities by exploiting natural resources. This sector includes agriculture, forestry, fishing, mining and quarry.

(*ii*) *Secondary sector:* This sector transforms one type of commodity into another type of commodity such as manufacturing cloth from cotton. It includes manufacturing, electricity, gas and water supply.

(*iii*) *Tertiary sector or service sector:* This sector provides various types of non-tangible goods, i.e., services, as compared to the primary and secondary sectors, which produce tangible goods. This sector includes trade, transport and communication, banking, insurance, government and professional services.

These three broad sectors in an economy are further divided into sub-sectors. For example, primary sector is divided into agriculture, forestry, mining, etc. The classification of industrial sectors varies from country to country. However, in India, CSO has distinguished 15 sectors for the measurement of national income.

Step 2: Estimation of Net Value Added by Each Enterprise

The second step in the value added method is estimation of net value added at factor cost by each of the enterprises. National income is the value of final goods and services produced. Therefore, we need to calculate the value of final goods and services produced by each enterprise. We insist on final goods and services so as not to include intermediate products (the value of which is already included in final goods and services) and thereby avoid double-counting. In practice double-counting is avoided by taking the value added by each enterprise. Value added is the value of a firm's output minus the value of intermediate products. Intermediate products are all goods and services used as inputs into a further stage of production. Value added by a firm is the value the firm adds to the intermediate inputs to get the final output. Thus, Maruti Udyog buys steel, tyres and other inputs and adds value to these inputs by producing a car. When we measure national income by net product method, we

count only the value added at each stage of production. Value added by Maruti Udyog is the value of cars produced by it less the value of the intermediate goods like steel and tyres used in producing cars.

The estimation of net value added at factor cost by each enterprise involves the following steps:

(*i*) The estimation of value of gross output by each enterprise is made by multiplying its product by appropriate market prices. This can also be calculated by adding the sales and change in stocks. The value so computed is called 'gross' because it contains many duplicate items in the form of intermediate goods, such as raw materials, fuel, coal, electricity and semi-finished goods. Cost of intermediate goods and services is included in the value of gross output. It is called gross also because it is estimated without deducting depreciation.

(*ii*) Gross value added by an enterprise is calculated by deducting the value of intermediate consumption from the value of gross output. Use of intermediate products for the production of goods and services is called intermediate consumption. We need to deduct intermediate consumption from the value of gross output to avoid double-counting.

(*iii*) Net value added at market price by each enterprise is estimated by deducting the value of depreciation from the gross value added by an enterprise estimated in step (2) above.

(*iv*) From the net value added at market price deduct net indirect taxes (or deduct indirect taxes and add subsidies) so as to arrive at net value added at factor cost by an enterprise.

Thus, Net Value Added at Factor Cost =

Value of Gross Output – Intermediate Consumption – Depreciation – Net Indirect Taxes

Step 3: Estimating Net Domestic Output

By adding the net value added at factor cost by all the producing enterprises in a sector, we get the net value added at factor cost of that industrial sector. The sum total of net value added at factor cost of all the industrial enterprises in the domestic territory of a country gives us the net domestic product at factor cost.

Step 4: Estimating of Net Factor Income from Abroad

The fourth and the final step is to estimate net factor income from abroad. Net National Product at factor cost, i.e., National income is obtained by adding net factor income from abroad to the net domestic product at factor cost.

Thus, National Income = Net Value Added at Factor Cost of Primary Sector
+ Secondary Sector + Tertiary Sector
+ Net Factor Income from Abroad

Precautions in Estimation

While estimating national income by value' added method, the following precautions should be taken:

Notes

- *Value of the goods produced for self-consumption*, such as food grains produced by farmers for the consumption by their families, should be included. They are not sold in the market and therefore do not have market price. Their value is to be estimated or imputed.
- *Own account production of fixed assets*, such as residential buildings by households and factory-buildings by entrepreneurs, should be included.
- *We should include the imputed rent of owner occupied houses*. Many people live in their own houses. They do not pay any rent; they are enjoying housing services similar to the people who are staying in rented houses. To take account of the housing services enjoyed by house owners, value of these housing services is estimated from the market rent of similar accommodation. Such an estimated rent is called imputed rent.
- *Services of housewives, such as cooking meals*, looking after the children, are excluded from national income because there is no way of evaluating these services. These services are produced and consumed at home and never enter the market place. For example, meals cooked at home by housewives are similar to meals cooked at restaurants, yet the value added in meals cooked at home is excluded from national income. Similarly, while the value of commercial day care services is included in national income, but taking care of your own child is excluded from national income. In these cases, an imputation is called for in principle, but it is not done in actual practice to keep the things simple.
- National income measures the value of currently produced goods and services. Sale and purchase of existing commodities or second-hand goods and services such as old cars, existing houses, old paintings are not included because these transactions have not contributed anything to the flow of goods and services in the current year. We do, however, count the commission of brokers in the sale of these commodities since these services are performed in the current year.
- Sale and purchase of bonds and share are excluded from national income since they only reflect the transfer of an asset, not an addition to the national income. However, services provided by the brokers are included as explained above.

Difficulties in Estimation

Measurement of national income by value added method involves many difficulties. The main difficulties are:

1. Unsold amount of goods add to inventories. Increase in inventories of goods is included in national income because these goods reflect current production of goods and services. However, there is the problem of valuation of inventories in view of the changes in prices.
2. Estimation of depreciation also poses a problem, whether it is to be valued at historical cost basis (i.e., the cost price when capital goods were purchased) or replacement cost basis.
3. National income accountants are not very clear whether certain products like education, transport expenses are final products or intermediate products.

4. In many cases, it is not possible to draw a clear-cut line of demarcation between intermediate goods and the final goods. Whether a product is a final product or an intermediate product depends on its use. Flour is a final good for a household but an intermediate product for a baker.
5. Finally, lack of adequate and reliable data, particularly in the case of subsistence and unincorporated sectors, is a serious problem in the measurement of national income in underdeveloped countries.

The value added method of estimating national income gives us useful information about national income by industrial origin, i.e., share of different sectors in national income. For example, what is the contribution of the agricultural sector in national income can be known with the help of value added method.

14.4. Income Method

Goods and services are produced with the help of various factors of production, viz., land, labour, capital, enterprise, etc. Therefore, it is natural that output produced is shared among these factors of production. Factors of production get this share in the form of factor incomes. Factor income is the reward that the factors of production get for their factor services.

The income method measures national income at the phase of factor payments made to primary factors for the use of their factor services. Under this method, national income is calculated by adding up all the incomes generated in the course of producing the national product. National income is taken as the sum total of all the incomes accruing to the primary factors of production used in producing the national product. This method of calculating national income involves the following steps:

1. In the first stage, producer enterprises which employ factor services are identified. These enterprises are classified into various industrial groups, such as agriculture, mining, forestry, manufacturing, electricity, trade, transport and communication, banking, insurance, government and professional services.
2. In the second stage, the factor incomes are grouped under different categories. Factors of production are traditionally classified into four categories, viz., land, labour, capital and enterprise or organization. Accordingly, factor payments comprise rent, wages, interest and profits. However, in national income accounting, factors of production are classified into two primary factors, viz., labour and capital. In some production activities however, labour and capital are provided by the same persons. Accordingly, factor income is classified into the following three broad categories:
   (*i*) Labour income or compensation of employees
   (*ii*) Capital or property income or operating surplus
   (*iii*) Mixed incomes.

Labour Income or Compensation of Employees

Labour income, also known as compensation of employees, is income from work for others. It is the payment to the workers for their labour. It is the payments

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made by producers to their employees in the form of wages and salaries and other payments made in cash and kind and social security benefits. Labour income includes:

(*a*) *Wages and salaries in cash*, including bonus, commission, dearness allowance, house rent allowance, travelling allowance to travel to and from the workplace, leave travel concession (LTC), sick leave allowance, etc.

(*b*) *Supplementary labour income* in the form of employers' contribution (not of employees) towards social security schemes for employees, such as provision for pension, provident fund, group insurance, gratuity, etc. It is important to note here that the contributions made by the employees themselves towards social security schemes are not included in the social security contributions while estimation compensations of employees are paid out of wages and salaries.

(*c*) *Payment to employees in kind* like rent free accommodation, free medical, free educational facilities, free or subsidized food, uniforms, free transportation, recreation and holidaying facilities, crèches for children of employees, free provision of goods and services produced by the employees, imputed interest on interest free loans etc.

Thus,

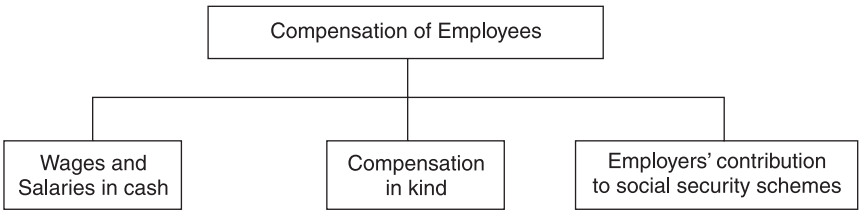

Fig. 14.2. Components of compensation of employees.

Operating Surplus

It is the income earned from the ownership and control of capital. It is also known as income from property and entrepreneurship. Capital income includes rent, interest, royalties, dividends, undistributed profits of corporations before corporation taxes. and profits of the government enterprises. Rental payments are incomes to people who own land and buildings and rent them out. The rents they receive from their tenants are rental payments. The income from rent includes rent on land as well as rent on buildings. It may be noted that rent of self-occupied houses in the form of imputed rent is also part of rental income. Royalty income consists of income received for granting the rights of mining to others and royalties earned from patents and copyrights. Interest payments are incomes received from lending to others. It includes interest received from lending to business firms, interest on government bonds (but not on war bonds and consumer credit), net interest paid by commercial banks, imputed interest on life insurance policies.

Income earned by entrepreneurs from entrepreneurship in the form of profits is known as income from entrepreneurship. It includes dividends and undistributed profits. Dividend is that part of profit which is distributed to the shareholders of the

companies. Large companies do not distribute their entire income to the shareholders in the form of dividends. They keep some part of the income with them in the form of '*undistributed profits*'. These undistributed profits are utilized in paying corporate profit tax and are partly kept in the form of corporate saving.

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Mixed Income

Mixed income is composed of labour income and capital income of those people who provide both labour and capital services in the production process. Such income is partly labour income and partly capital income. It is mixture of income from work and income from property and entrepreneurship. Mixed income includes the income of own-account workers and income of unincorporated enterprises. Such incomes include earning from agriculture, trading, transport, sole proprietorship, various professions like legal and medical professions and incomes of own account workers like plumbers, carpenters, etc.

3. In the third stage the domestic factor income is estimated. Income paid out by each producer enterprise is estimated by adding together three kinds of incomes, viz., compensation of employees, operating surplus and mixed incomes. Incomes paid out to all the factors of production in a particular industrial sector, such as agriculture, manufacturing, etc. is found out by adding the incomes paid out by each enterprise in that sector. Then we add the incomes paid by all the industrial sectors to get the domestic factor income. Thus, the sum total of compensation of employees, capital incomes and mixed incomes by all the production units in the domestic territory of the economy during the accounting year gives the measure of domestic factor income.
4. In the last stage, net factor income earned from abroad is added to domestic factor income to arrive at national income. Net factor income from abroad, as noted earlier, is the difference between the factor income received from abroad for providing factor services and the income paid for the factor services provided by non-residents in the territory of a country. It is the difference between factor incomes arising out of factor services rendered by the normal resident of a country to the rest of the world less factor incomes arising from factor services rendered to them by the rest of the world. The components of net factor income from abroad are:
   (*a*) Net compensation of employees
   (*b*) Net income from property and entrepreneurship, i.e., net income from interest, rent, ividends and profits; and
   (*c*) Net retained earnings of resident companies abroad.

Thus,

National Income = Compensation of employees + Capital incomes or operating surplus + Mixed incomes + Net factor income from abroad

Precaution in Estimation

- While calculating national income by income method, we should include the following two items since they constitute income in kind:

(*i*) Value of production for self-consumption, such as agricultural products used by the farmers for the consumption by their families.

(*ii*) Imputed rent of the self-occupied houses by the owners of these houses.

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- Imputed value of the services provided by the owners of production units in production process should also be included the following items should not be included in the income for diverse reasons:

All transfer incomes (payments) like old age pensions, unemployment relief, scholarships to the students, assistance given by government and other agencies to meet exigencies like flood, drought, etc. should be excluded from national income because they have been received without rendering any productive services in exchange in the current year. Such payments lead only to transfer of income from one pocket to another. These transfer incomes do not reflect any production of foods and services in the current year.

Illegal incomes like income of smugglers, illegal drug traders, gamblers and illegal arm dealers are excluded from national income as they are the result of illegal activities and are unaccountable.

Interest on national debt is excluded from national income since it is treated as transfer income on the assumption that the government borrowings are used for consumption purposes. This is the national income convention as public debt in the past was used for unproductive purposes.

Money income received from the sale of second-hand goods, boundaries, etc. are excluded from national income because they do not can tribute anything to the current flow of goods and services. These as actions reflect only changes in the ownership of pre-existing input. However, the commission charged by brokers on such as actions should be included in the national income.

Private transfer payments, such as pocket money given by parents to their children, money given to elders by their children, etc., are excluded as they are merely transfer of money from one individual to another.

- Windfall gains, such as income from lotteries, should not be included as they do not contribute to current flows of goods and services.
- In calculating national income, we include profits before deduction of corporation tax. Therefore, corporation tax should not be included separately.
- Wealth tax, gift tax, etc., are paid out of current out of past savings. Hence, they should not be regarded as part of national income.

Difficulties in Estimation

Estimates of national income by income method poses various difficulties, the major difficulties are:

1. Firstly, it is difficult to estimate mixed incomes. Mixed incomes are earned by the unincorporated sector, and it is difficult to get reliable information from such an unorganized sector.
2. Interest on national debt is not included in national income as per the national income convention on the assumption that government borrowings are used for consumption (unproductive) purpose. However,

some economists object to this since a part of the government borrowing is used for productive purposes.

3. Incomes received are generally calculated from income-tax returns. Therefore, income method is of limited use in underdeveloped countries because a very small part of the income earners are tax payers in these countries.

Income method of estimating national income is useful because it provides information about distribution of national income among various factor categories like share of wages and profits, etc. in national income.

14.5. Expenditure Method

The third method of calculating national income is the expenditure method; It measures national income at the disposition stage, i.e., the disposition of final products. It estimates national income by measuring the final expenditure on gross domestic product. In other words, it measures national income by estimating expenditure on final products. The final products are those which are purchased for consumption and investment. As such expenditure on consumption and investment constitutes the value of the final products. Expenditure is done by private individuals like households and government. Accordingly, consumption expenditure is classified into private and government final consumption expenditure. Expenditure on investment is done by producers and government within the economy. In an open economy, there is foreign component of expenditure in the form of net exports.

Having understood the basic framework of expenditure, let us explain the expenditure method. Estimation of national income by expenditure method involves the following steps:

1. All the economic units which incur expenditure on final products are divided into four groups:
   (*i*) Households, (*ii*) Business sector,
   (*iii*) Government sector, (*iv*) Rest of the world.
2. Final expenditure on final goods and services in the economy is divided into four broad categories:
   (*i*) Consumption expenditure, (*ii*) Investment expenditure,
   (*iii*) Government expenditure, (*iv*) Net exports.

   These four categories of expenditure correspond closely to the four sectors into which the economy is divided as explained in step 1 above.
3. The third step involves the measurement of the components of final expenditure. Different components of final expenditure are measured as follows:

Estimation of Private Final Consumption Expenditure

Private final consumption expenditure comprises of expenditure on the purchase of consumer goods and services (except houses) by households and private non-profit institutions serving households like schools, clubs, charitable hospitals, etc. It is divided into three major sub-categories:

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(*i*) Expenditure on non-durable goods, such as food, beverages, etc., which are used immediately or within a short span of time.

(*ii*) Expenditure on durable goods like TVs, cars, etc., which could be used for a longer period of time.

(*iii*) Expenditure on services like transport services, medical services etc.

We calculate the final consumption expenditure by the households and private non-profit institutions serving the households on the domestically produced consumer goods and services by multiplying the volume of sale of these goods and services in the market with the retail prices.

While calculating consumption expenditure, several points should be noted. First, expenditure on purchase of new houses is excluded from consumption expenditure since it is taken as investment expenditure. Second, only currently produced goods and services are included. Expenditure on purchase of old goods like old cars should be excluded because these goods do not represent current output.

Third, production for self-consumption by producers should he included. Production for self-consumption is a part of production and income, and since this part of production is used for consumption by the producers, it is also a part of final consumption expenditure.

Lastly, imputed rent on the self-occupied houses is also included in the final consumption expenditure. By living in their own houses, the owners are consuming or using the housing services.

Estimation of Investment Expenditure

Investment means addition to the physical stock of capital goods, such as machinery, factories, residential houses and addition to a firm's inventories of goods during a given period. Investment consists of investment goods bought for future use. Investment expenditure is the expenditure on investment or capital goods. Capital goods are produced by firms and they may be bought by firms, by households (purchase of residential houses) or by governments.

Investment expenditure is divided into three sub-categories:

(*i*) Expenditure on business fixed investment, i.e., expenditure on the purchase of new plants, machinery, equipments, factories, transport equipments, construction works (like irrigation, dams, telephone lines, etc.) and breeding stock.

(*ii*) Inventory investment, i.e., change in inventories of the firm which are in the warehouses, goods on store shelves, on showroom floors, which have not yet been sold or converted into a final good.

(*iii*) Expenditure on residential investment, i.e., expenditure on the purchase of new houses by households and landlords.

- *Expenditure on machinery, equipment* (business fixed investment) can be estimated by taking the value of final sales at market prices. Own account production of machinery and equipment by the producers has to be added to get the final expenditure on machinery and equipment.
- *Inventory investment,* i.e., increase in stock of goods—final goods awaiting sale, semifinished goods, raw materials, etc., with producers and retailers,

is calculated at market price. Net increase in stock of consumer goods with households is excluded from inventory investment on the assumption that goods with the consumers are consumed the moment they are purchased. We include inventory investment as an investment item because it represents goods produced but not used for current consumption. Inventory investment in an economy is calculated by taking the difference between the opening stock and the closing stock.

- Expenditure on residential houses can be found out by estimating the total money spent on construction of new houses. Total expenditure on new housing is equal to the expenditure on the material inputs like cement, steel, bricks, wood, etc. and factor payments to labour and capital in the form of wages, salaries, rent, interest and profits. Own-account production of houses, expenditure on major repairs and renovations are to be included in the expenditure on residential houses. Housing construction is counted as investment because it provides utility slowly over a long time. However, investment in housing is different from investment in capital goods in that houses are purchased by households while capital goods are purchased by firms.

Thus, expenditure on machinery and equipment, changes in inventories and expenditure on residential housing give us total investment expenditure or gross investment. However, a part of this expenditure is incurred to replace the worn-out capital. The amount necessary for replacement is called depreciation. By deducting depreciation from gross investment, we get nil investment,

Thus,

Net Domestic Investment = Gross Fixed Business Investment + Inventory Investment + Gross Residential Investment – Depreciation

Estimation of Government Expenditure

The third category of spending is government expenditure. The government expenditures are of two types:

(*i*) Current expenditure on goods and services, i.e., Government final consumption expenditure.

(*ii*) Capital expenditure, i.e., Public investment.

Capital expenditure of the government is generally taken along with private investment expenditure. Therefore, we take here general government final expenditure. The final expenditure of the general government is also known as government final consumption expenditure. It consists of expenditure on administration, defense expenditure, expenditure on maintenance of law and order, expenditure on social welfare services, education, sanitation, etc. The government incurs expenditure in providing these services to the public to satisfy their collective wants. That is why this expenditure is regarded as government final consumption expenditure. Very often government expenditure does not produce marketable products. These government services have no market price. Therefore, there arises the problem of how to value the government services. Government final consumption expenditure is valued in terms of cost to the government since the government services have no market price.

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The cost of these services to the government is the sum total of compensation of employees and the cost of the goods and services purchased by the government to provide these services. For example, cost of defense services comprises wages and salaries paid to military personnel and cost of military equipments.

Though the government does not sell these services in the market, yet sometimes it charges a very nominal amount as fees from those individuals who get these services. For instance, government hospitals take nominal charges from the patients and government educational institutions charge nominal fees from the students. Such receipts by the government should be deducted from the total cost of these services to arrive at the net expenditure on these services.

It is important to note that a large part of the government expenditure is on transfer payments like social security schemes, unemployment compensation and welfare payments. These transfer payments redistribute existing income and are not made for goods and services produced in the current period. They are therefore excluded from national income as they do not generate any output in the current period.

Estimation of Net Exports

The final spending item is net exports. Net exports are the difference between the value of goods and services exported to other countries and the value of goods and services imported from other countries. In an open economy a country has transactions with rest of the world through, among other things, international trade, i.e., exports and imports of goods and services.

A country exports some of its' goods to other countries. For example, India exports tea, coffee, jute and cotton fabrics, cars and bicycles to other countries. A country also exports various types of services, such as shipping, insurance, banking, transport and tourist services. For instance, when foreigners use Indian ships to transport goods and passengers India exports shipping services. There are also exports of goods and services in the form of direct purchases made in the domestic market by non-resident households and others. For example, when tourists come to India from abroad, they make direct purchases in India in the form of purchases of food, handicrafts, transport and accommodation. On the same token, a country imports various types of goods and services from other countries.

Why are net exports added when computing national income through expenditure approach? There are two reasons. First, exports represent foreign spending on domestic goods. When foreigners purchase goods and services we produce, their spending adds to the demand for domestically produced goods and services. Goods and services exported to other countries are produced by producers operating within the domestic territory of a country. Hence, exports of goods and services is a part of domestic product. For instance, when goods which India exports are produced in India, they are not counted in consumption or investment or government purchases in India. Thus, exports need to be added to get a measure of production. The second reason is that expenditure on imports of goods and services is part of the aggregate spending by the residents of a country, though it is a part of the domestic product of other countries. For example, if an Indian household imports a *Toyota car* from Japan, it is included in consumption expenditure even though it is not produced in India. To

measure what is produced in India, the expenditure on Toyota car must be deducted. Imports must be subtracted to find out what is total production in the economy. Thus, net exports account for domestic spending on foreign goods and foreign spending on domestic goods. Since net exports are exports minus imports, adding net exports to spending is the same as adding exports and subtracting all imports.

The sum total of four items—consumption, investment (net), government spending and net exports is the total final expenditure which gives us net domestic product at market prices. By deducting net indirect taxes, we get net domestic product at factor cost.

In the last stage, net factor income earned from abroad is added to net domestic product at factor cost to arrive at Net National Product at factor cost or National Income.

Thus,

y represents national income,

C stands for consumption expenditure,

In represents net investment,

G stands for government expenditure,

(X – M) represents net exports,

NIT stands for net indirect taxes,

NYA represents net income from abroad.

Precautions in the Estimation

While estimating national income by expenditure method, we need to take the following precautions:

1. All final products should be included irrespective of whether expenditure is incurred on them or not. Many final products are not purchased from the markets and hence no expenditure is incurred on them, but these must be included in the national income. Goods meant for self-consumption, such as farmers consuming part of the food grains produced by them, must be assigned some value based on market prices of the similar products. Similarly imputed value to the owner occupied houses must be assigned because the owners of these houses are consuming the housing services.
2. Expenditure on intermediate products is excluded. The reason is that the value of intermediate goods is already included as part of the market price of final goods in which they are used. To add the expenditure on intermediate goods to the expenditure incurred on the final goods would be double-counting.
3. All expenditures on second-hand goods should be excluded. National income measures the value of currently produced goods. Expenditure on second-hand goods reflects only the transfer in the ownership of these goods; it does not lead to any addition to the economy's output.
4. Expenditure on financial assets like shares and bonds is excluded because it reflects only the transfer in the ownership of these assets.
5. Government expenditure on transfer payments is not included in

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expenditure and therefore national income. Transfer payments are payments which are made without any factor services rendered in return in the current period. Although these payments play an important part in achieving certain social objectives, they do not create current production. Transfer payments are not, therefore, a part of expenditure on final output.

Expenditure method involves the same types of difficulties which arise in the case of value developing countries about expenditure.

The expenditure method provides information about the level of consumption and investment in the economy. It also shows the relative share of private sector and public sector in the total expenditure of an economy.

The main components of national income at the output, income and expenditure stages of calculation of national income are summarized in Table 14.1 and Fig. 14.3 for easy and quick reference.

Table 14.1. Components of net national product at factor cost in all of its three phases.

Output Method	Income Method	Expenditure Method
1. Gross Value added at Market Prices in : (*a*) Primary sector (*b*) Secondary sector (*c*) Service sector	1. Domestic Factor Income : (*a*) Compensation of Employees (*i*) Wages and Salaries (*ii*) Supplementary labour incomes (*iii*) Compensation in kind	1. Final Expenditure on Gross Domestic Product (*a*) Private Final Consumption Expenditure (*b*) Government Final Consumption Expenditrue (*c*) Gross Domestic Capital Formation (*d*) Net Exports of Goods and Services
2. Depreciation		2. Depreciation
3. Net Indirect Taxes	(*b*) Operating Surplus (*i*) Net Interest (*ii*) Net Rent (*iii*) Dividends (*iv*) Undistributed corporate profits (*v*) Profits of Govt. Companies (*c*) Mixed Incomes	3. Net Indirect Taxes
4. Net Factor Income Earned from Abroad	2. Net Factor Income Earned from Abroad	4. Net Factor Income Earned from Abroad
Net National Product at Factor Cost = 1 – 2 – 3 + 4	**Net National Product at Factor Cost = 1 + 2**	**Net National Product at Factor Cost = 1 – 2 – 3 + 4**

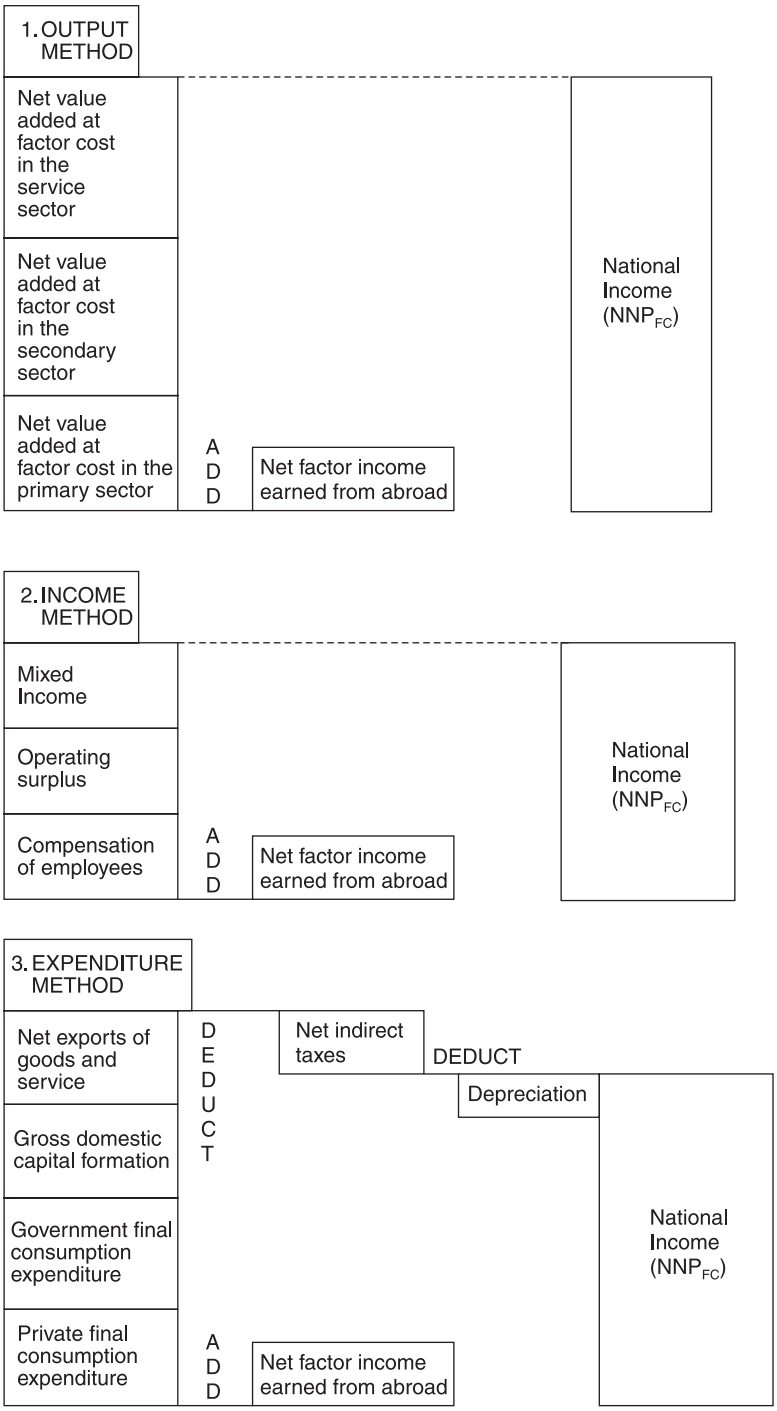

Fig. 14.3. Summary of measurement of national income.

14.6. The Identity of Output, Income and Expenditure

While calculating national income by using three methods, we have taken national income in the technical sense as the value of output at factor cost. National income can be taken as the value of final output or the incomes generated in producing it or the expenditure needed to purchase it. The three concepts, viz., national product,

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income generated and total expenditure, are so defined so as to give identity among national product, national income generated and total expenditure. That is,

National Product = Income Generated = Total Expenditure

Here, = (read three-bar as identity) implies that the three magnitudes are equal by definition. The national product produced in an economy generates income claims by the same amount. In terms of national income accounting practice, output produced must be matched by the claims on that output of various factor incomes—wages, interest, rent and profits. In other words, factor incomes must account for all output. Thus, national product is equal to national income generated. Total expenditure is taken to mean the expenditure needed to purchase the national product. That is why national output is equal to total expenditure.

However, in practice national income is calculated by the three methods independently of each other using output data or income data or expenditure data. Thus, they may not give an identical total. That is why different estimates of national income contain a component of statistical discrepancy to reconcile calculations of the three methods.

14.7. Significance of the Three Methods

Ideally, national income of a country should be measured by all the three methods separately. This is because each method provides a different view of the economy. Depending upon which phase of the national income we want to analyze, we can use different methods of estimating national income. If it is viewed from the production phase, such as the relative contribution of different sectors in the net output produced, the net output method is better. For analyzing the distribution phase of income, like how the national product is distributed among factors of production, the income method is used. And if national income is viewed in its expenditure phase like the level of consumption, investment and government expenditure in the economy, expenditure method is more appropriate. But, order to have a complete view of the economy from the point of view of production, income distribution and pattern of expenditure, it is essential to measure national income by all the three methods. Moreover, method provides a cross-check on the accuracy of other methods. In short all the three methods should give us the same national income.

However, most of the countries, particularly developing countries like India, face the problem of inadequate and unreliable data. Hence, they are able to estimate their national income by each method separately. Countries like India do not have complete data for any circular method. Therefore, the usual practice is to combine two or more methods to measure national income. For instance, in India contribution culture is estimated by output method and contribution of small-scale registered manufacturing units is estimated by income method.

14.8. Difficulties in Measurement of National Income

National income is quite a complicated task. It is beset with difficulties of various kinds. These difficulties can be broadly classified into two categories:

(*i*) Conceptual difficulties (*ii*) Practical difficulties.

While conceptual problems are of general nature and appear in almost all the countries, practical difficulties have particular relevance to underdeveloped countries.

Conceptual Difficulties

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Conceptual difficulties relate to the definitions of the concepts of National Income. Some of the important conceptual difficulties are:

1. **Inclusion of services:** There is the basic problem of what should be included in output and, therefore, national income. The problem is associated with the inclusion of services in national income. There is difference of opinion as to whether services should or should not be included in the national income. Marxian economists believe that services should be excluded from national income, while others say that services should be included in national income. Both views prevail in actual practice. For example, in socialist countries all services are excluded from the computation of national income. In the capitalist countries and other countries including India, services are included in national income.
2. **Identifying intermediate goods:** As we know, national income comprises final goods and services only; intermediate goods are excluded from national income. However, in actual practice, it is difficult to draw a clear-cut distinction between intermediate goods and final goods. Many goods can be intermediate as well as final goods depending upon their use. For example, flour used by a bakery is an intermediate good, while flour used by a household is a final good, similarly, transport expenditure incurred by a person to reach his office is intermediate cost; but if this expenditure is incurred by him to take his family on holidays, it is expenditure on final goods. It is difficult to decide what part of the expenditure on transportation is intermediate cost and how much of this expenditure is of the nature of final expenditure. Any mistake in identifying cost may lead to overestimation or underestimation of national income.
3. **Identifying factor incomes:** There is also the problem of separating factor incomes from non-factor incomes. National income comprises only factor incomes, i.e., incomes paid in exchange for factor services like wages, rent, interest, etc. Non-factor incomes, i.e., payments received which look like factor incomes but are not actual factor payments, are not included in national income. For example, interest payments on loans taken for consumption, payments received by selling old houses, old cars, sale of shares, etc., are such non-factor incomes. Individuals and businesses mix the two types of incomes and it is difficult in practice to separate the two.
4. **Services of housewives and other similar services:** National income largely includes those goods and services for which payment in money form is made. There are many services for which no payment is made in money form. One of these is services of housewives in their own homes, such as cooking, looking after the household, taking care of children. Similarly, men do many services for themselves and for the family members, such as shaving, are gardening one's own garden, teaching one's own children. No payment is made for these services and, therefore, they

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are not included in national income. It is difficult to impute the value of these services because there is no statistically sound method of estimating their value and also because these services are performed out of love, affection and regard, which makes their valuation impossible. Therefore, national income convention has followed an easy way out by excluding these services from national income. This method of overcoming this difficulty has led to some anomalies. All these services can be performed by the paid hands, such as maid servant, gardener, tutor, etc. If they are performed by hired persons, national income will increase, though actual output is the same. By the same token, national income of underdeveloped countries is underestimated because these unpaid services are relatively more important in these countries.

5. **Imputing unpaid services:** There are some services rendered without involving any payment. For example, government provides various free services to the people, such as general administration, police, etc. However, there is no record of such free services. Moreover, there is no standard method of imputing the value of these services. In practice, some ad hoc method is used for imputing their value.
6. **Income of the foreign companies:** It is a matter of controversy, whether the income of foreign firms should be included in national income or not. One viewpoint is that the income which the foreign firms retain in the country should be included in national income, and the income which is repatriated abroad should not be included. This is the convention which is normally followed, in case of such incomes.
7 **Valuation of inventory changes:** Inventory valuation is a very difficult and cumbersome job. The problem of inventory valuation is how to take the valuation of stock of goods, whether the valuation should be done at the original cost or at current prices. The practice, however, is to carry out valuation at current prices.
8. **Estimation of depreciation:** Estimation of depreciation is also a very difficult task. Depreciation of a piece of capital can be estimated at its original cost or at its replacement cost. However, the usual practice on the part of the firms is to estimate the depreciation provisions on the basis of the original cost of their assets.

Practical Difficulties

Practical difficulties relate partly to difficulties associated with under-developed stage of the country and partly to non-availability of reliable statistical data. Some of the important practical difficulties are as follows:

1. **Lack of occupational specialization:** For national income calculation it is necessary that producers be classified into various specific occupations. But in developing countries like India, occupational classification of producers into distinct groups is almost impossible, particularly in the agricultural sector. A substantial proportion of working population undertakes more than one activity during a year. This makes the estimation of national income difficult. For example, a small agriculturist may work

in the agricultural sector during the cultivation period, in cottage and household industry during the off season, and he may go to the urban area and may work as a casual worker or as a rickshaw puller. In such a case, it is very difficult to assign any particular occupation to him and allocate his income to that particular occupation.

2. **Non-monetized sector:** The large, unorganized non-monetized sector of a developing economy like India serves as the biggest bogey for national income calculation. Nonmonetized sector refers to that part of the economy where goods and services are exchanged through barter without the use of money. In a developing economy, agriculture is carried on a subsistence basis. A very large part of production does not come to the market for sale. It is partly kept by producers for their personal consumption and is partly exchanged for other goods. Such goods and services which do not enter the market need to be included in national income. At present there is no objective method of estimating the value of such goods and services. The absence of data about such goods and services makes the imputation all the more difficult. Therefore, estimates of national income have the stamp of guess-work and arbitrary imputation.
3. **Inadequate information regarding income and output:** Another difficulty that arises particularly in underdeveloped countries is that a very large number of producers are not sure of the exact quantity and the value of output they produce. A very large part of production activity in these countries is unorganized, consisting of small farmers, small shopkeepers and small independent artisans. Most of the small producers do not keep account of their production and income. Under these circumstances, the estimates of output and income are simply guess-work.
4. **Unreported illegal income:** Sometimes people distort facts and provide false information about their income to evade income-tax and wealth tax. This leads to generation of black money, i.e., income which is evaded from income-tax, etc. For example, a significant part of the Indian economy operates as the parallel or hidden economy and the income generated there goes as unreported income. Obviously, national income estimates to that extent have an, element of underestimation.
5. **Non-availability of reliable statistical data:** The most important difficulty in the estimation of national income in a developing country like India is the non-availability of reliable data. There are a number of gaps here, which are:
   (*i*) There is a dearth of agencies and statistical organizations collecting national income data.
   (*ii*) A large number of enumerators entrusted with the task of collecting data at the village level are semi-illiterate and untrained, in the collection of data. They do not possess requisite knowledge of collecting, classifying and analyzing data.
   (*iii*) Thirdly, there are also major gaps of data in respect of agricultural by products like fruits, vegetables, timber and fire woods. Price on

several products like livestock, poultry products are inadequate. Moreover, data in respect of consumption, savings and investment expenditures are incomplete.

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The data in many cases are incomplete, full of deficiencies and in some cases non-existent. National income estimates based upon inadequate inaccurate and incomplete data need not be dependable.

14.9. Summary

- National income is often considered as the most comprehensive measure of how well the economy is performing. It is necessary and important, therefore, to measure national income of a country so as to have an idea of the performance of the economy.
- The net product or value added method measures national income as the sum total of net final output produced or net value added by all the producing units in an economy during a year.
- The income method measures national income at the phase of factor payments made to primary factors for the use of their factor services.
- Labour income, also known as compensation of employees, is income from work for others.
- It is the income earned from the ownership and control of capital. It is also known as income from property and entrepreneurship.
- Mixed income is composed of labour income and capital income of those people who provide both labour and capital services in the production process.
- Private final consumption expenditure comprises of expenditure on the purchase of consumer goods and services (except houses) by households and private non-profit institutions serving households like schools, clubs, charitable hospitals, etc.
- Investment means addition to the physical stock of capital goods, such as machinery, factories, residential houses and addition to a firm's inventories of goods during a given period.
- National income can be taken as the value of final output or the incomes generated in producing it or the expenditure needed to purchase it.
- National Product = Income Generated = Total Expenditure
- The national product produced in an economy generates income claims by the same amount. In terms of national income accounting practice, output produced must be matched by the claims on that output of various factor incomes—wages, interest, rent and profits. In other words, factor incomes must account for all output. Thus, national product is equal to national income generated.

14.10. Review Questions

1. How would you treat the following items in estimating a country's national product
   (*i*) Sale of an old car

(*ii*) Purchase of shares in the stock market

(*iii*) Services of housewives.

2. How would the domestic product be affected by the following transactions? Give reasons for your answers.

   (*i*) Sale of an old car by its owner and purchase of a new scooter with the money.

   (*ii*) Sale of an old house through brokers who are paid a commission.

3. How are the following treated in national income calculations?

   (*i*) Intermediate goods,

   (*ii*) Pocket allowance of children,

   (*iii*) Owner-occupied houses,

   (*iv*) Pensions,

   (*v*) Income from smuggling.

4. Why are the services of housewives not included in national income? Should they be included?

5. Explain various components of income in the income method of estimation of national income.

6. Why should the following not be included in national income? Give reasons.

   (*i*) Intermediate on national dept,

   (*ii*) Income from the sale of an old TV set,

   (*iii*) Payment of pension by the government to its employees,

   (*iv*) Income of a smuggler.

7. Explain briefly the net output (production) method or value added method of estimating national income.

8. Explain clearly the income method of estimating national income of a country.

9. Explain clearly the expenditure method of estimating national income.

10. Explain various categories in which the final expenditures are divided.

11. Explain briefly different methods of estimation of national income.

12. Discuss the difficulties which arise in the esitmation of national income, particularly in the context of a developing country.

13. Explain any four major difficulties in estimation of national income.

14. Define net income earned from abroad and describe its various components.

15. Explain briefly the basis of classification of production units into primary, secondary and territory sectors.

16. What precautions are necessary while estimating national income by value added method and income method?

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Unit–15

Inflation

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Structure

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15.1. Introduction

Inflation is a global phenomenon in present day times. There is hardly any country in the world today which is not afflicted by the specter of inflation. It is on account of this that the phenomenon of inflation has widely attracted the attention of the economists the world over, but despite that there is no generally accepted definition of the term 'inflation' as it is a highly controversial term which has undergone modifications. Different economists have offered different definitions of inflation. In fact, there is a plethora of definitions on the subject. The layman, however, understands by the term 'inflation' a sizeable and a rapid increase in the general price level. Inflation in the popular mind is generally associated with rapidly rising prices which cause a decline in the purchasing power of money.

15.2. Definitions of Inflation

Prof. Crowthers has defined inflation "as a state in which the value of money is falling, i.e., prices are rising. But this definition of Prof. Crowthers is defective and does not offer a complete picture of the phenomenon of inflation. This definition has been criticized on two grounds:

(*i*) According to Crowthers, every increase in the price level is inflationary

and has harmful consequences for the economy. This, however, is contrary to experience. An increase in the price level in the midst of depression is inflation and has no harmful effects on the economy. On the contrary, it serves as a stimulant for the revival of the economy.

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(*ii*) Prof. Crowthers's definition emphasizes the symptoms rather than the cause of the disease. The rise in the price level is a symptom rather than the cause of inflation. This definition fails to explain why the price level increases from time to time.

Prof. Hawtrey defines inflation as the "issue of too much currency." This definition is also defective like Crowthers's. It is vague insofar as it does not explain as to what is meant by over issue of currency. The definition does not offer a clear criterion of the term "over issue of currency". As such, it is unsatisfactory.

Prof. Kemmerer has defined inflation "as too much currency in relation to the physical volume of business being done. Even this definition is not satisfactory. Obviously, this definition involves a comparison between the two quantities—the volume of currency on the one side and the volume of physical goods and services on the other side. The difficulty with this definition is that it suffers from vagueness. It is not possible to determine accurately the demand for money. There is no dependable technique whereby the physical volume of goods and services can be accurately converted into the demand for money. As such, Kemmerer's definition cannot be looked upon as a satisfactory definition.

Prof. Coeburn has also emphasized the same point as has been done by Prof. Kemmerer in the above definition. He says, "Inflation is too much money chasing too few goods." Coeburn's definition also involves a comparison between the quantity of money on the one side and the supply of goods and services on the other side. This definition is subject to the same limitations as Kemmerer's definition.

Prof. Golden Weiser offers a similar definition which reads as follows: "Inflation occurs when the volume of money actively bidding for goods and services increases faster than the available supply of goods. This definition also emphasizes the same point, namely, that the value of money increases at a faster rate than the supply of goods and services.

Modern economists do not agree that money supply alone is the cause of inflation. As pointed out by Hicks, "Our present troubles are not of a monetary character." Johnson defines inflation as a sustained rise.

Broman defines inflation "as a continuing increase in the general price level." Shapiro also defines inflation "as a persistent and appreciable rise in the general level of prices."

The above definitions given by Kemmerer, Coeburn, Golden Weiser belong to the same category. They seek to establish cause and affect relationship between supply of money and the price level. According to these definitions, the rise in the price level is caused by an increase in the supply of money. The increase in the supply of money is the cause; the rise in the price level is the effect.

But the above cause and effect relationship between supply of money and the price level was reversed in Germany after the First World War. The rise in the price level, instead of being the result, was actually the cause of the expansion of money

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supply in Germany in the post-war period. In other words, the hyperinflation which took place in Germany in the post-war period could not be explained by the normal cause and effect relationship between supply of money and the price level as pointed out in the above definitions. It was the rise in prices which caused the expansion of money supply in Germany. It is in this context that Prof. Paul Enzi has drawn a distinction between 'money inflation' and 'price inflation'. According to him money inflation is the first stage of inflation in which the excess of money supply over business requirements pushes up the price level. Price inflation is the second stage of inflation when the rising price level necessitates a rapid expansion of the supply of money. During the price inflation, the prices rise so rapidly that even the money supply cannot keep pace. This stage of inflation is referred to as hyperinflation. To our mind, Prof. Paul Enzi's definition of inflation quoted in the beginning of this chapter fully explains the phenomenon of inflation. In the words of Prof. Enzi, "Inflation is that state of disequilibrium in which an expansion of purchasing power tends to cause or is the effect of an increase of the price level." An analysis of this definition reveals the fact that the rise in the price level is not only the result but also the cause of the money supply.

The definition discussed above looks upon inflation as a purely monetary phenomenon. But recently the Cambridge economists, including Pious and Keynes, have analyzed inflation as a phenomenon of full employment. Prof. Keynes has linked up the concept of inflation with the phenomenon of full employment. According to Keynes, an inflationary rise in the price level cannot take place before the point of full employment. An expansion of money supply will not lead to a rise in the price level so long as there are unemployed resources in the economy. The price level will rise only after the point of full employment has been reached. An expansion of money supply before the point of full employment will increase output and employment, not the price level. The price level will increase only if the expansion of money supply is continued even beyond the point of full employment. According to Keynes, the rise in the price level after the point of full employment is true inflation. It is possible for the price level to rise even before the point of full employment if there arise certain bottlenecks in the expansion of output in the economy. But this rise in the price level cannot be termed as true inflation. Prof. Keynes has referred to this pre-full employment inflation as semiinflation.

15.3. Approaches to the Theory of Inflation

There are two main approaches to the theory of inflation:

(1) The Quantity Theory of Money Approach,

(2) The Excess Demand Approach.

The Quantity Theory of Money Approach

This approach to inflation is based on the quantity theory of money. According to this approach, it is the increase in the quantity of money which causes an inflationary rise in the price level. The definitions of inflation are offered by Hawtrey. This approach looks upon inflation as a purely monetary phenomenon. It has been subjected to criticism in recent years:

(*i*) This approach does not adequately explain the phenomenon of hyperinflation which took place in Germany in the post-war period. As pointed out above, it was the rise in the price level which caused an increase in the supply of money there. In other words, the rise in the price level was the cause and the increase in the money supply was the result.

(*ii*) This approach is not applicable to an economy which suffers from depression and unemployment. An expansion of money supply in such an economy may not necessarily result in an inflationary rise in the price level. An expansion of money supply in such an economy instead of raising the price level will increase output and employment. Inflation may not result consequent upon any expansion of money supply in an economy suffering from depression and unemployment.

The Excess Demand Approach

This approach has been developed in recent years by the Cambridge economists, particularly Prof. Keynes. According to them, "Just as the price of any good is determined by the demand for it and the supply of it, so also the general price level is determined by the total demand for and total supply of the group of goods concerned." Thus, according to this approach, inflation is that situation in which the total demand for goods exceeds the total supply of goods at current prices. The sole cause of inflation, according to this approach, is the existence of a persistent excess demand in the economy.

The phenomenon of excess demand can arise in a number of situations:

(1) War Period: During war-time the government expenditure invariably goes up and results in a substantial increase in the demand for various goods and services. It is on account of this that price level shows a rising trend during war-time.

(2) Planning Period: The phenomenon of excess demand can also arise during a period of developmental planning. The demand for investment goods invariably goes up under the impact of developmental planning. This results in an increase in the general price level in the economy.

(3) Period of Rapid Technological Improvement: The excess demand for goods and services may also rise during a period of rapid technological developments in the economy. The reason being that technological developments necessitate fresh investments in the various sectors of the economy. This naturally increases the demand for investment goods of various types.

A situation of excess demand can also arise when the total supply of goods and services declines for certain reasons without a corresponding fall in their demand. Such a situation will also result in the emergence of excess demand leading to an inflationary rise in the price level.

We have outlined above the two approaches to the theory of inflation. There is, however, a fundamental difference between these two approaches. The excess demand can become effective only through an increased supply of money. The increased supply of money is, thus, the causal factor of inflation. Ultimately, there is

no basic difference between the quantity theory of money approach and the excess demand approach. The excess demand approach is, however, more popular than the quantity theory of money approach. It is, therefore, to the excess demand approach that we now turn for a detailed analysis.

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Causes of Inflation

The above explanation of the excess demand approach highlights the various factors that cause the emergence of excess demand in the economy. The emergence of excess demand in the economy can be attributed to two main factors: (*i*) increase in the demand for goods and services, and (*ii*) decrease in the supply of goods and services.

Factors Causing an Increase in Demand: Both Keynesians and monetarists believe that inflation is caused by increase in demand. Following are the factors which cause an increase in the size of demand:

(*i*) *Increase in public expenditure:* An increase in the public expenditure consequent upon the outbreak of war or developmental planning invariably causes an increase in the demand for goods and services in the economy. In fact, this is an important cause giving rise to the emergence of excess demand in the country.

(*ii*) *Increase inprivate expenditure:* An increase in private expenditure, consumption expenditure as well as investment expenditure is an important cause of the emergence of excess demand in the economy. When business conditions are good, private entrepreneurs start investing more and more funds in new business enterprises, giving rise to an increase in the demand for the services of factors of production. This results in an increase in factor prices. When factor incomes increase, there is more and more of expenditure on consumption goods. The ultimate effect of an increase in private expenditure is to push up the demand for commodities as well as factors of production.

(*iii*) Increase in exports: An increase in the foreign demand for the country's products reduces the stock of commodities available for home consumption. It is evident that when more and more of commodities are exported to foreign countries, less and less of them are available for domestic consumption. This naturally creates a situation of shortages in the economy, giving rise to inflationary pressures.

(*iv*) Reduction in taxation: The reduction in taxation offered by the government can also be an important cause for the emergence of excess demand in the economy. When the government reduces taxes, it results in an increase in the purchasing power in the hands of the public. With increased purchasing power, the people are in a position to buy more and more of goods and services for private consumption.

(*v*) *Repayment of past internal debts:* When the government repays its past debts to the public it results in an increase of purchasing power which the latter uses for buying goods and services for consumption purposes. This naturally leads to an increase in aggregate demand in the economy.

(*vi*) *Rapid growth of population:* A rapidly growing population has the effect of raising the level of aggregate effective demand for goods and services in a country. This acts as an inflationary force and tends to raise the prices to higher levels.

(*vii*) *Black money:* The existence of huge amount of black money in the economy is also responsible for increase in demand. People spend such unearned or easy money extravagantly on buildings, marriages, luxurious items etc.; thereby creating demand for commodities.

(*viii*) *Deficit financing:* In order to meet its mounting expenses, the government resorts to deficit financing by borrowing from the public and printing notes in huge quantity. This raises aggregate demand in relation to aggregate supply.

(*ix*) *Cheap money-policy:* Cheap money policy or the policy of credit expansion also leads to increase in the supply of money which raises the demand of goods and services.

(*x*) *Increase in consumer spending:* The demand of goods and services increases when the consumer spending increases. It may be due to easy availability of credit etc. It increases the demand of goods and services.

Factors Causing a Decrease in Supply: Following are the factors which result in a reduction in the supply of goods and services:

(*i*) *Shortage of supplies of factors of production:* Occasionally, the economy of a country may be confronted with shortages of such factors as labour, capital equipment, raw materials, etc. These shortages are bound to reduce the production of goods and services for consumption purposes. In fact, the shortage of productive factors is a serious obstacle to any effort to increase production in the country.

(*ii*) *Industrial disputes:* In countries where trade unions are strong, they help in curtailing inflation. Trade unions resort to strikes and if they happen to be unreasonable from employers' point of view and are unreasonably prolonged, they force the employers to declare lock-outs. In both causes industrial production falls, thereby reducing supply of goods.

(*iii*) *Natural calamities:* Natural calamities like floods, droughts etc. adversely affect the supplies of agricultural products. The latter, in turn, create shortage of food products and raw materials, thereby helping inflationary pressures.

(*iv*) *Operation of law of diminishing returns:* In most of in the country which is using old and obsolete machines and outdated methods of production, the law of diminishing returns operates. This raises cost per unit of production, thereby raising the prices of products, leading to inflation.

(*v*) *Lop-sided production:* If the stress is placed on the production of comfort and luxury goods, thereby neglecting essential and consumer goods in the country, it creates shortage of goods in the market and hence causes inflation.

(*vi*) *Hoarding by traders:* At a time of shortages and rising prices, there is a tendency on the part of traders and merchants to hoard essential

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commodities for profitable purposes. The stocks of essential goods often go underground during a period of inflation and rising prices, causing further scarcity of these goods in the market.

(*vii*) *Hoarding by consumers:* It is not only the traders and the merchants who resort to hoarding at a time of inflation. The individual consumers also hoard essential commodities to avoid payment of higher prices in future. They also hoard essential commodities to ensure their uninterrupted availability for private consumption.

15.4. Types of Inflation : Demand Inflation and Cost Inflation

Broadly speaking there are two main causes of inflation: (*i*) an increase in effective demand, and (*ii*) an increase in production costs. The former gives rise to demand pull inflation, while the latter leads to cost push inflation.

Demand Pull Inflation or Demand Inflation

Demand inflation is caused by an increase in the aggregate effective demand for goods and services in the economy. It is the direct result of an excess of aggregate effective demand over the aggregate supply of goods and services. The process of the initiation of demand inflation is somewhat like this. To start with, there is an increase in the supply of money. This increase in the supply of money is soon followed by a fall in the rate of interest. The fall in the rate of interest leads to an increase in investment in the economy. The increase in investment is followed by an increase in the money incomes of the factors of production. With increased money incomes, there is an inevitable increase in the expenditure on consumption goods. It is natural on the part of the factors of production to spend additional amounts on consumption goods when their money incomes register an increase consequent upon an increase in the demand for their services. Increased consumption expenditure inevitably necessitates a further increase in investment expenditure. Since the economy was already operating at the point of full employment, an increase in investment expenditure will naturally result in demand inflation. This demand inflation will be marked by a considerable rise in commodity and factor prices in the economy. General shortages (of goods and services), lengthening queues, increasing imports, rising wage earning, increasing employment and rising profit are some of the indicators of the presence of demand inflation in an economy.

This type of demand inflation generally arises in the post-war period, when people rush up to increase demand for goods and services. During the war period, the people generally keep postponing their purchases on account of the all-round shortages of commodities in the economy. As soon as the war is over and the availability of consumption goods shows some improvement, the people rush to the markets to satisfy their long standing demand for goods. The demand inflation can be tackled by the government by curtailing unnecessary demand through the adoption of monetary and fiscal measures.

Cost Inflation or Cost Push Inflation

It is also known as supply inflation. Cost inflation is not due to excessive aggregate demand but is caused by an increase in production costs. The factors of

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production may deliberately raise the prices of their services through various types of collusive activities. Cost inflation is generally caused by three factors: (*i*) an increase in wages, (*ii*) an increase in the profit margins, and (*iii*) imposition of heavy commodity taxes. The increase in wages may be caused by a monopolistic lab our union through pressure tactics. As is well known, the labour day is well-organized into powerful trade unions. These unions, taking advantage of their organized strength, invariably dictate their own terms to the employers. This attempt on the part of the trade unions to push up the wages invariably causes cost inflation in the economy.

Cost inflation may also be caused by an organized attempt on the part of the industrialists to push up their profit margins. When such attempts are made, the prices cannot remain at their old levels. The rise in the prices caused by the raising of profit margins has its own repercussions on the working of the economy. But the profit-push elements are not so important in causing inflation as the wage-push elements are. There are two reasons for this. Firstly, profit constitutes rather a small part of the total price of the commodity. Even if the profit margin is raised a little, it may not have any significant effect on the price of the commodity. Secondly, the industrialists generally do not like to raise the profit margin beyond a certain limit for fear of alienating their customers. The wage-push elements are, therefore, a more important cause of cost inflation. Powerful trade unions get the wages pushed up even without an equivalent increase in the productivity of the workers. Under these circumstances, the increase in wages cannot but result in an increase in prices. The industrialists, on their part, shall never be prepared to absorb the increase in wages by lowering down their own profit margins. So any increase in the wages of the workers cannot but result in an increase in the price level and hence in cost inflation. It should, however, be remembered that cost inflation, when it takes place, does not remain confined to one particular sector or one particular industry. When cost inflation arises in one particular industry, it soon spreads to the other sectors of the economy as well. This reason being that the various sectors of the economy are linked with each other.

The output of one industry may serve as the input of another industry. So, if the prices of output in one industry rise, it raises the production cost in another industry as well.

The cost inflation starting in one industry now becomes an all around phenomenon for the economy.

Again, the government may impose heavy levels taxes on different commodities and in sellers' market the producers can easily shift the tax burden on to the shoulders of the consumers so long along with a margin of their own. These invariably causes cost inflation in the economy.

It should however be remembered that demand inflation and cost inflation are not mutually exclusive concepts. Demand inflation, when it starts, may soon land the economy into cost inflation. An increase in the prices of consumption goods is invariably accompanied by the demand for higher wages on the part of the workers. The prices of raw materials may also register a rise under the impact of demand inflation. An increase in wages and the prices of materials will naturally lead to the emergence of cost inflation in the economy. It is, thus, difficult to demarcate the line between demand inflation and cost inflation. Increasing commodity taxation, rising wages, falling profit margins, frequent devaluations of national. The currency (to

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push up exports) are important indicators of the presence of cost-push inflation and in the economy.

Of the two types of inflations, cost inflation is much more difficult to control than demand inflation. Demand inflation can be tackled by adopting various types of monetary and fiscal measures to mop up surplus purchasing power from the hands of the public, but cost inflation be easily controlled through monetary and fiscal measures. The reason is obvious. Any a attempt to cut down wages by the authorities will be met by stiff resistance on the part of the workers.

The theory of inflation would be complete only if the two sides, namely, the demand side and supply side are integrated to provide a viable explanation of the phenomenon of rising prices.

15.5. Keynesian Concept of Inflationary Gap

Keynes' views on inflation have already been referred to in the preceding pages. As pointed out there; an expansion of money supply, under conditions of unemployment, does not lead to an inflationary rise in the price level. It leads rather to an increase in output, though in the later stages of expansion, even the price level may increase due to certain bottlenecks. But this rise in prices before full employment is not real inflation. Real inflation comes into being only if monetary expansion continues beyond the point of full employment. Then every additional expansion of money supply shall exert its full effect on prices, raising them to higher and higher levels. Thus, according to Keynes, expansion of money supply need not frighten us so long as there are unemployed human and material resources in the economy. Keynes does not deny that prices may rise even before the point of full employment is reached, but that, would not be real inflation. It shall only be "bottleneck inflation" as he puts it.

Keynes tried to explain the phenomenon of inflation in terms of his well known concept of inflationary gap in his famous pamphlet entitled. How to Pay for the War? The Keynesian concept of inflationary gap represents the technique of statistically measuring the pressure of inflation in the economy. The inflationary gap for the economy as a whole may be defined in the words of Prof. Koriyama, "as an excess of anticipated expenditure over available output at base prices. The anticipated total expenditure referred to in the above definition depends upon the net disposable income of the community. The net disposable income of the community, in its own turn, is arrived at by subtracting taxation and saving out of the total money income.

Net disposable income = Total money income – Taxation – Saving.

Anticipated total expenditure of the community is determined by the aggregate consumption, investment and government outlays. Thus,

Total anticipated expenditure = C + I + G, where, C represents consumption expenditure, I denotes investment expenditure, and G shows government outlay on goods and services.

The real output, on the other hand, is determined by the conditions of employment plus the technological basis of the economy. The inflationary gap is a situation where the anticipated expenditure (i.e., the demand for output) exceeds the available output

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at pre-inflation prices. It is measured by the difference between the net disposable incomes on the one hand and the available output on the other.

The inflationary gap may develop in the economy like this. To start with, there is an increase either in private investment or government outlays. This has the result of raising the money income of the community to higher levels, but the real output of goods and a service does not increase because the economy is already operating at the point of full employment. The failure of the economy to raise its output in response to the increase in money incomes results in the emergence of the inflationary gap. The inflationary gap is, thus, the result of excess demand in the economy. In other words, the inflationary gap is equal to net disposable income minus real output of goods and services.

"To illustrate the concept of inflationary gap, we can take the example of a wartime economy which is generally a full-employment economy. The value of gross national product in an economy (whether wartime economy or peacetime economy) is determined by the aggregate consumption. Expenditure (C) plus private net investment (1) plus government outlay (G) on goods and services. Let us suppose that the value of gross national product is ₹ 270 crores at preinflation prices. Actually, this represents the total output of the economy at preinflation prices. Now, if out of this total output of ₹ 270 crores the government takes away output equivalent to ₹ 90 crores for war purposes, then only ₹ 180 crores worth of output is available for civilian consumption. In this way, ₹ 180 crores represents the supply side of the economy. It is the value of the available supply of goods for civilian consumption. Now let us take the demand side into consideration. If the price level in the economy is not to rise, then the incomes paid out to the factors of production should be in proportion to the value of goods at pre-inflation prices. In other words, the money income paid to the factors of production must also be equal to ₹ 180 crores. In that case, there shall be no inflationary gap and hence no rise in the price level. Let us now suppose that the money income paid to the factors of production is ₹ 300 crores. If out of this total money income the government takes away ₹ 50 crores by way of taxes, then the total disposable income left with the community would be ₹ 250 crores. Assuming that the community pays another sum of ₹ 50 crores by way of saving, then the net disposable income would be ₹ 200 crores. This is the actual amount of money income which is available to the community for spending purposes. But, as pointed out above, the civilian consumption goods available amount to ₹ 180 crores at the pre-inflation prices. When the net disposable income of ₹ 200 crores is allowed to compete with the available output of ₹ 180 crores, there arises an inflationary gap equivalent to ₹ 20 crores.

The above process has been summarized in Table 15.1.

Table 15.1. Demand side vs. supply side.

Demand Side		Supply Side	
Total money income	300	Gross national product	
		(at pre-inflation prices)	270
Minus taxes	50	Minus war expenditure	90
Total disposable income	250	Available output for	

Minus Saving	50	civilian consumption	
Net disposable income	200	(at pre-inflation prices)	180

Hence, Inflation Gap = 200 – 180 = ₹ 20 crores.

Notes

From this Table, it is clear that there is an inflationary gap of ₹ 20 crores in the economy. So long as this Inflationary gap continues to exist the price level shall go upward. But If some how this inflationary gap of ₹ 20 corers is wiped out, there shall be no inflation at all. The government can reduce a part of the inflationary gap by cutting down disposable income through taxes. But the whole of the gap cannot be wiped out through taxation because in that case there is bound to be tax resistance and popular unrest. So it is advisable to remove the inflationary gap through taxes as well as induced saving. Yet another way to reduce or narrow down the inflationary gap is to increase the supply of consumption goods. But in war-time the scope for increasing the supply of consumption goods for civilians is rather limited. So the only methods available for narrowing down the inflationary gap during war-time are taxes, and public borrowing. It should, however, be remembered that the inflationary gap cannot be compatibly wiped out during war-time. Hence, the possibility of inflation is always there in a war-time economy.

We have seen above that the inflationary gap arises in a war-time economy. But, it is quite possible for the inflationary gap to emerge in a planned economy as well. Under developmental planning, the public expenditure considerably increases, giving rise to an increase in the money income of the community. But the supply of consumption goods does not increase in the same proportion on account of the existence of bottlenecks in the economy. This naturally results in the emergence of an inflationary gap which inevitably results in an increase in the price level. The basic point to remember is that there shall be no rise in the price level if the amount of disposable income in the community and the volume of output available are the same. But in case the amount of disposable income exceeds the volume of output available, an inflationary gap is bound to rise in the economy. If, on the contrary, the volume of output exceeds the disposable money income, then a deflationary gap is bound to emerge, giving rise to a falling price level in the economy. If the danger of inflation is to be avoided in a developing economy, it is important to wipe out the inflationary gap as much as possible. The task, however, is not easy. The nature of investment in a developing economy is such that there is a prolonged gestation period between investment and the ultimate production of goods and services, giving rise to inflationary pressures during the intervening period.

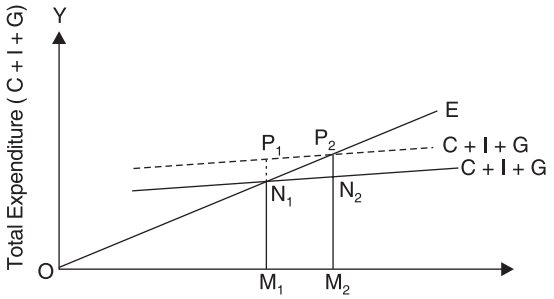

Fig. 15.1. Gross national product.

Notes

The concept of inflationary gap can be illustrated by means of a diagram as shown in Fig. 15.1.

In this diagram, the X-axis represents the gross national product or the real income of the community. The Y-axis shows the total anticipated expenditure (C + I + G). C indicates consumption expenditure, I denotes private investment expenditure, and G represents government expenditure. The total anticipated expenditure of the economy is indicated by the C + I + G function.

The line OE is the equilibrium line indicating that the economy is in equilibrium when the output of goods and services (as represented by the GNP) equals the demand for them (as represented by the total expenditure). The C + I + G curve intersect the line OE at the point N_1. This gives us the equilibrium income indicated by OM_1. This OM_1 represents the full employment income at the preinflation prices. The aggregate monetary demand here is shown by the C + I + G curve, which is equal to N_1M_1.

M_1 is equivalent to the total output of goods and services amounting to OM_1. Since the total money income is equal to the total available output, there is no question of any excess demand; hence, there is no possibility of the emergence of an inflationary gap in the economy. Now let us suppose that for some reasons the government increases its expenditure by a certain amount, say P_1N_1 as shown in the above diagram. This raises the total government expenditure from the earlier level of G to G′. Thus, the new expenditure function in the economy is C + I + G′. Since OM_1 is the real income of the economy at the full employment level, it does not increase with the increased government expenditure (G′) amounting to P_1N_1. Now P_1N_1 represents the excess of monetary demand over the available output of goods (i.e., OM_1). Thus, P_1N_1 represents the inflationary gap in the economy. It naturally raises the price level to higher and higher levels. Since the economy is already operating at the point of full employment, the supply of money income increases more rapidly than the output of goods and services in the economy. With the expenditure increasing faster than the output of goods and services in the economy, the prices will naturally rise to equate the increased expenditure with the money value of output at a higher price level. The inflationary gap may, therefore, be defined as the amount by which the monetary demand exceeds the value of current output at existing prices. In order to keep prices constant, the output should be increased by an amount that is sufficient to absorb the excess demand caused by the increased government expenditure. In the context of the above diagram, the price level can remain constant only if the output of goods and services increases from OM_1 to OM_2. In other words, the output of goods an services is the economy must increase by M_1M_2. This amount of output is equal to the excess demand P_1N_1 caused by the increased government expenditure. The inflationary gap of P_1N_1 in the above diagram can be wiped out only if the output of goods and services increases by M_1M_2'.

The concept of inflationary gap is a very useful concept in economic analysis. It is of great practical significance. The inflationary gap not only measures statically the pressure of inflation in the economy; it also highlights the nature and the extent of ant-inflationary measures, both fiscal and monetary, which the government can adopt to cure the economy of the malady of inflation. In the words of Prof. Koriyama, "An analysis of the inflationary gap in terms of such aggregates as national income, investment outlays and consumption expenditures clearly reveals what determines

public policy with respect to taxes, public expenditure, saving campaigns, credit control, wage adjustments—in short, all the conceivable anti-inflation measures affecting the propensities to consume, to save and invest which together determine the general price level."

Notes

An Analysis of Inflationary Pressures in the Economy

It is easy to explain inflationary pressures in an economy in terms of the inflationary gap both from the demand side and the supply side. By demand is meant the income demand or the demand for money income for commodities and services, while supply here indicates the available output of goods and services on which money income can be spent by the community. On the demand side, the main inflationary factors are: (*i*) the supply of money, (*ii*) disposable income, (*iii*) consumer expenditures and business outlays, and (*iv*) foreign demand. During war-time, the supply of money increases due to increased demand deposits (consequent upon increased governmental spending) and expansion of bank credit, exerting upward pressure upon the price level. The volume of disposable income also records a rise due to a large increase in national income. No doubt, a part of the disposable income is saved, but a major portion is spent on consumption goods, thus, tending to raise prices still further. Business outlays also increase during an inflationary boom, raising total spending to still greater heights. And finally, an increased demand for domestic goods and services, on the part of foreign countries, exerts strong inflationary pressure on prices.

In contrast to a sharp rise in monetary demand (at a time of war) the supply of goods and services tends to increase at a slow rate, widening the inflationary gap still further. Why does the output of goods and services increase at a slow rate? The main reason is that during an inflationary boom the human and material resources are already fully employed and as such any attempt to increase output is accompanied by several bottlenecks and shortages of labour, raw materials and equipment. The situation is rendered still more difficult by the wage-price spiral. Demands for wage increases often lead to price rise. In addition, expectations also play an important role in the speed-up of inflation. The expectations of higher prices in future lead to hoarding both on the part of the consumers as well as businessmen. Expectations of wage increases often induce some businessmen to increase the prices of their products even before the upward wage adjustments have actually been made.

15.6. Types of Inflation

There are several types of inflation observable in an economy. These can be classified as under:

Creeping, Walking, Running and Galloping Inflations

This classification is made on the basis of the 'speed' with which the prices increase in the economy.

(1) Creeping Inflation: When the price rise is very slow like the pace of a snail or creeper, it is called creeping inflation. It is the mildest type of inflation. The government has sometimes to resort to creeping inflation to make the economy dynamic. This type of inflation serves as a tonic

for a backward and underdeveloped economy. Under this, the prices rise slowly; industry and trade receive stimulus and the country slowly and gradually develops economically. It is on account of its stimulating effect that some economists welcome it for the economic development of a backward economy. In fact, there are some economists who support creeping inflation in the form of a slow and gradual rise in prices to keep the economy away from stagnation. But there are also some economists who look upon creeping inflation as potentially dangerous. Their view is that if proper control is not exercised over creeping inflation, it may assume alarming proportions with the lapse of time. They, therefore, suggest that creeping inflation must be controlled effectively in time before it is too late. It has been pointed out that the price level rises approximately by 2% annually under creeping inflation. As such, creeping inflation may not be considered to be too dangerous for the smooth functioning of the economy.

(2) Walking or Trotting Inflation: When prices rise moderately and the annual inflation is a single digit, it is called walking or trotting inflation. The rate of the increase of the price level acquires greater speed under walking inflation. Rouges speaking, the price level under walking inflation rises approximately by 5% annually. If proper control is not exercised over walking inflation in time, it can easily assume the form of running inflation.

(3) Running Inflation: When the prices rise rapidly like the naming of a horse at a rate of speed 10 to 20 per cent per annum, it is called manning inflation. The rate of the increase of price level gets further accelerated under running inflation. The price level under this type of inflation rises approximately by 10% every year. In case, the government fails to curb running inflation in time, it may easily develop into galloping inflation.

(4) Galloping Inflation or Hyperinflation: When prices rise very fast at double or triple digit rates from more than 20 to 100% per annum or even more, it is called hyper or galloping inflation. In fact, this is the most dangerous type of inflation. Under this type of inflation, the prices rise every minute, and there is no upward limit to which the price level may rise in course of time. Lord Keynes has referred to this type of inflation as the time inflation. This type of inflation invariably occurs after the point of full employment. Under this, the price level rises approximately by 16% every year. There are two classic examples of galloping inflation in recent history, (*i*) the Great Inflation of Germany after the First World War, and (*ii*) the Great Chinese Inflation after the Second World War. In both of these countries, the inflationary forces had assumed highly alarming proportions. The above classification, as already pointed out, has been made on the basis of the 'speed' with which the price level rises in the economy. Under creeping inflation, the prices rise up by 50% in 25 years but under walking, running and galloping inflations this rise of 50% in the price level takes place in 10, 5 and 3 years respectively.

In fact, these stages of inflation are similar to the stages of the physical

development of a child. Just as a child first learns to cramel and then in course of time learns to walk, run, and finally gallop, creeping inflation can also develop into walking, running and then galloping inflations in due course of time.

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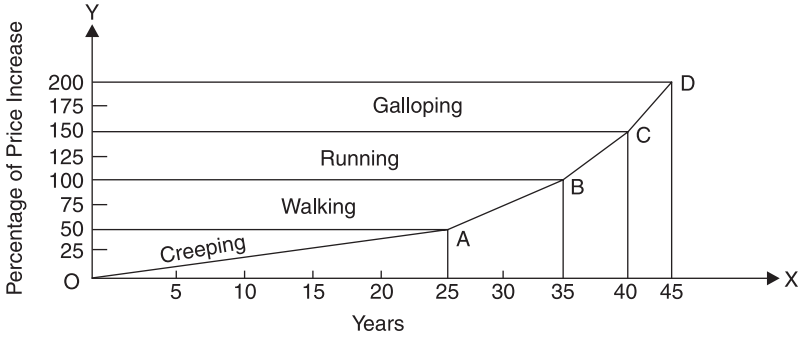

Fig. 15.2. Types of Inflation.

The above explanation of inflation can also be represented by means of a diagram. In the above diagram, the 'years' have been represented on the X-axis and the percentage increase in the price level on the fifth Y-axis. In the list period of 25 years, the prices of the commodities have gone up by 50%. The OA line, represents creeping inflation. In the second period of 10 years, the, rises have gone up by 50%. The AB line in the above diagram denotes walking inflation. In the period of 5 years, the prices again shoot up by 50%, and the BC line shows running inflation. In the same manner, the prices rise by 50% in the fourth period comprising three years in duration. The line CD represents galloping inflation. Thus, in a total period of 43 years, all i.e., four types of inflation take place in succession and the price level rises by 200% during the entire period.

Comprehensive and Sporadic Inflation

The former type of inflation occurs when the prices of all commodities register a rise in the economy. It is comprehensive inflation. Normally speaking, inflation, when it takes place is comprehensive inflation. The prices of almost all the commodities show an upward trend during a period of inflationary spiral.

Sporadic inflation, on the other hand, is sectoral inflation. Under this type of inflation, the prices of all the commodities do not register a rise. Only the prices of a few commodities show an upward trend. The prices of a few commodities may rise upwards on account of central physical bottlenecks which may impede any attempt to increase their production. For example, the prices of food grains may show an upward rise on account of the failure of crops, consequent upon the failure of rains. Hence, sporadic inflation is of a sectoral nature. It can be dealt with effectively if the government resorts to the imposition of direct price control on the sale of the affected commodities.

Open and Repressed Inflation

Inflation can also be classified into open and repressed inflation according to the government's reaction to the presence of inflationary pressures in the economy.

(1) Open Inflation: Inflation is said to be open when the government takes no steps to check the rise in the price level. Open inflation is allowed to

continue unchecked without any attempt on the part of the government to hold the price line. Under open inflation, the market mechanism is allowed to work itself out fully without restrictions being imposed by the government. The market mechanism is left free to distribute resources amongst the various industries. If there is any shortage of any particular resource, the market mechanism would inevitably raise its price and allocate it to those uses and industries which can afford to pay a higher price for it. Thus, the market mechanism performs its classic function of distributing scarce factors among competing industries. The hyperinflation experienced by Germany after the First World War is an excellent example of open inflation.

(2) **Repressed Inflation:** Inflation may be said to be repressed inflation when the government actively intervenes to check the rise in the price level. The government may check the rising trend in the price level by resorting to price control and rationing of scarce items in the economy. During the Second World War, the inflationary forces were kept under check through the imposition of war-time controls in almost all the countries of the world. As soon as the war is over and the war-time controls are withdrawn, repressed inflation inevitably bursts out into open inflation. The war-time controls, however, check the rising prices and distribute the scarce commodities through a system of price control and rationing. Thus, the administration of controls on prices and rationing of scarce goods is an inseparable feature of repressed inflation. It is on account of this that repressed inflation invariably results in such evils as profiteering, black-marketing, hoarding and corruption on a large scale. This may also "lead to the diversion of economic resources from the more essential to the less essential industries, the reason being that the price mechanism under repressed inflation is not allowed to function freely: The prices of essential goods are statutorily fixed, while those of non-essential goods are left free and uncontrolled. The margin of profit being higher in non-essential goods, the economic resources are bound to be diverted to the production of such goods to the detriment of the community.

Full Inflation and Partial Inflation

Prof. Pigous has classified inflation into (*i*) full inflation, and (*ii*) partial inflation. According to Prof. Pigous, the price level consequent upon the expansion of money supply in the pre-full employment state is referred to as partial inflation. There is only a slight increase in the price level under partial inflation. The increase in the supply of money goes to mobilize the idle resources in the economy. This results in an increase in the volume of employment in the economy. Thus, the increase in the supply of money before the point of full employment goes to increase the volume of output and employment rather than the price level.

But the increase in the supply of money after the point of full employment does not increase output and employment (because there already exists full employment of resources in the economy), but leads to a sharp uninterrupted rise in the price level. Such a situation is referred to as the situation of full inflation.

Peace-time, War-time and Post-war Inflation

Notes

(*i*) **Peace-time inflation:** This classification of inflation has been done on the basis of 'time'. By peace-time inflation, we mean the rise in the price level during peace-time. This type of inflation is very often the result of increased governmental expenditure on ambitious developmental projects in the economy. Such inflation very often occurs during a period of planned economic development in backward and underdeveloped economies.

(*ii*) **War-time inflation, on the contrary, arises during a period of war:** Modern wars, as is well known, are total wars, necessitating huge governmental expenditure on their successful prosecution. During war-time, the increase in the output of goods and services does not keep pace with the expansion of money supply. An inflationary gap inevitably emerges which results in a rising price level.

(*iii*) **Post-war inflation:** This generally takes place immediately when the pent-up demand finds open expression on the relaxation of price and physical controls by the government. The rise in the price level under post-war inflation may even be more rapid than during war-time inflation.

Other Types of Inflations

Inflation may also be classified on the basis of the 'factors' which cause this-Phenomenon. Under this head, we shall consider not only currency and credit inflations but also profit-induced, deficitinduced, wage-induced and scarcity-induced inflation.

(*a*) **Currency Inflation:** This is the classic type of inflation marked by an excess supply of money in relation to the available output of goods and services. Since the excessive supply of money is confronted with a limited supply of goods and services, it inevitably results in an inflationary rise in the price level. This type of inflation generally occurs at a time of war.

(*b*) **Credit Inflation:** Sometimes the government encourages an expansion of credit without expanding the supply of money in circulation. This is known as credit inflation. The main objectives of credit inflation are: (*i*) to lighten the burden of indebtedness of the farmers, (*ii*) to expand production, and (*iii*) to mobilize financial resources for development plans.

(*c*) **Profit-induced Inflation:** Sometimes the production costs start declining, and consequently, the prices also show a declining trend. But the government does not allow the prices to fall by resorting to artificial means. In such a situation, the prices do not go up but at the same time they are not allowed tc fall down. This situation results in an increase in the profit margins of the producers. Prof. Keynes refers to this type of inflation as profit-induced inflation. Under profit-induced inflation, the prices continue to stay at the old levels.

(*d*) **Deficit-induced Inflation:** Very often, it happens that the government fails to set up its income to meet the increased expenditure consequent upon the outbreak of the war. This results in a deficit in the budget of the government. The government is not able to cover this deficit by resorting

to new taxes and public borrowings. Under these circumstances, the government is forced to cover the deficit by resorting to the printing press. This is known as deficit-induced inflation. The government of a backward, underdeveloped country may also be forced to resort to deficit financing to finance its developmental plans. This may result in a rising price level. Since the deficit in the budget is covered by resorting to the printing press, this type of inflation is known as deficit-induced inflation.

(*e*) **Wage-induced Inflation:** When the workers organize themselves into powerful trade unions and force the employers to increase their wages, this inevitably pushes up production costs. Consequently, the prices of goods and services rise upward. This may be referred to as wage-induced inflation.

(*f*) **Scarcity-induced Inflation:** When the supply of money does not increase but the supply of goods decreases on account of natural calamities, the prices show an upward trend. This may be called scarcity-induced inflation or production inflation

Besides the above, there are other types of inflations as well, namely:

(*g*) **Mark-up Inflation:** This term is quite current in the USA. This type of inflation is attributed to the peculiar method of pricing (of goods and services) adopted by the gigantic business organizations operating in that country. According to this method, the big business organizations calculate their production costs first and then add to these costs a certain mark-up to yield the targeted rate of profit on their capital investment. The mark-up is invariably on the high side and constitutes not an insignificant cause of inflationary pressure in USA. The mark-up method is being abused by the monopoly business organizations to inflate their profits. The higher the demand, the greater is the size of the mark-up.

(*h*) **Ratchet Inflation:** A ratchet, when it takes hold of a mechanism, holds it in a fixed position. Under ratchet inflation, the prices in certain sectors are not allowed to fall (or, are held in a fixed position) even though there are strong reasons for the prices to decline. Sometimes, it happens that the aggregate demand in the economy is not high, but it is not properly distributed among the various sectors. In certain sectors, the aggregate demand is excessive, while in others it is quite low. In the former sectors, the prices would register a rise, while in latter sectors, the prices should decline. But the prices are not allowed to fall in accordance with the low aggregate demand in the latter sectors due to resistance from the industrialists and trade unions. Thus, while the prices in the excessdemand sectors rise, they are not allowed to fall in the deficient-demand sectors. The net result is a rise in the general price level. This is known as 'ratchet inflation'.

(*i*) **Stagflation:** A new type of inflation had come into vogue in the post-war period particularly since the sixties. This is known as stagflation. It is not inflation in the strict Keynesian sense. Inflation in the Keynesian sense is accompanied by overfull employment. All the remedies suggested by J. M. Keynes were intended to tackle this type of inflation. But the

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present day inflation is quite different from the traditional inflation which the world had to bare prior to the sixties. The present-day inflation is accompanied, not by full employment but by increasing unemployment. The term "stagflation" appropriately depicts the present day inflationary situation in the world. It is inflation accompanied by stagnation on the development front. High prices and high unemployment go hand-in-hand. "Stagflation" is a global phenomenon today. No country, whether developed or developing, is free from its clutches. The whole western world, particularly Great Britain, Italy, USA are in the grip of "stagflation" today. The developing countries, including India, have also fallen prey to this most vicious type of inflation. Apart from its debilitating effects, it is the most difficult type of inflation to deal with. The well known Keynesian remedies, such as, budget surpluses, higher taxes and spending cuts have not only arrested inflation, but have also aggravated the unemployment situation in various countries of the world. Any step taken to ease the unemployment situation through increased capital investment adds to the inflationary fire while any policy adopted to deal with inflation through cuts in public expenditure, increases the number of unemployed. The world stands today between the devil (of inflation) and the deep sea (of unemployment).

(*j*) Sectoral Inflation: Sometimes the rise in prices may not be general, but restricted to a particular sector of the economy. This type of inflation is referred to as sectoral inflation. If timely steps are not taken, the inflation in a particular sector may soon spread to other sectors of the economy. It may, then, cease to be sectoral inflation. For example, agricultural production suffered a serious setback in India during 1979–80 due to drought conditions. Agricultural prices shot up. This inflation, however, did not remain confined to the agricultural sector for long. The manufacturers also pushed up the prices of their products due to the higher cost of raw materials and increased wages.

(*k*) Imported Inflation: It refers to that type of inflation which is caused in a country due to the operation of external inflationary pressures which are transmitted to the country concerned through foreign trade. For example, if a country depends to a very large extent on imported goods and services, any inflationary pressure is bound to have its repercussions on its domestic economy. Several successive hikes in the prices of petroleum and petroleum products by the oil exporting countries after 1973 have had their impact on the price situation in India.

15.7. Stages of Inflation

It is often said that like tuberculosis, inflation passes through three stages. In the first stage, the rise in prices is slow and gradual. In this stage, it is comparatively easier to check the inflationary rise in the prices of goods and services. But if inflation is not effectively checked in the first stage then like tuberculosis it enters into the second stage. Inflation, in the second stage, becomes a serious headache for the government. The prices of goods and services now start rising much more rapidly

than before. The government finds it difficult to keep the rising price level under check. In the second stage, it is not possible to eliminate inflation completely, but if the government takes effective steps, it may be possible to prevent a further rise in the price level. In the third stage, inflation assumes alarming proportions. In this stage, inflation degenerates into hyperinflation or runaway inflation. The prices of goods and services now start rising almost every minute and it becomes impossible for the government to check them. The entire economy of the country is seriously disrupted. Finally, the government is compelled to resort to demonetization of the currency.

The above three stages of inflation can be illustrated with the help of an example. In the first stage, the prices do not rise in the same proportion in which the supply of money increases. In other words, the prices rise in a proportion less than that of the increase in the supply of money. For example, if the supply of money increases by 10%, the prices rise by 5% or even less than that. In the second stage, the prices rise exactly in the same proportion in which the supply of money increases. In other words, if the supply of money increases by 10%, the price level also goes up exactly by 10%. In the third stage, the prices rise in a much greater proportion than the increase in the supply of money. In other words, if the supply of money increases by 10%, the price level may rise by 15% or even more. Now, we shall describe the above three stages one-by-one.

1. Pre-full Employment Stage

As said above, the rise in the price level in the fullest stage is less than proportionate to the increase in the supply of money. Let us suppose that the supply of money increases by 10%. As a result, there will be an immediate rise in the price level. Consequently, the production of goods and services will receive stimulus. As a result of the increase in the output of goods and services, the price level will come down. But if the supply of money is again increased by 10%, the price level will rise up, giving encouragement to the production of goods and services in the economy. In this way, if there is a continuous increase in the supply of money, a stage will come when the output of goods and services may not increase in the same proportion in which the supply of money increases. The reason being that with the expansion of production, the supply of the factors of production, goes on declining. The hitherto unutilized resources are now already fully mobilized for production. With the lapse of time, there arises scarcity of productive resources in the economy. Consequently, the rate of increase of production slows down.

2. Full Employment Stage

If the supply of money continues to increase without any interruption, then after some time production will cease to increase, or in other words, production will become stagnant. The reason being that the productive resources are already fully employed. In other words, there is already full employment of productive resources in the economy. Extra resources are not available for a further expansion of production. Hence, the further expansion of production comes to an end. Since production becomes constant, the price level now starts increasing in the same proportion in which the supply of money increases.

3. Post-full Employment Stage

Notes

If the supply of money continues to increase even after the point of full employment, then for some time the price level will increase in the same proportion in which the supply of money increases. But after that the supply of money increases so much that the public loses confidence in it and the increase in the price level is much more than the increase in the supply of money. For example, if the supply of money increases by 10%, then the price level increases by 20%, 30% or even 40%. In such a situation, it becomes difficult, if not impossible, to check the rise in the price level. This is the final stage of inflation. In this stage, the prices rise so high that money exchange comes to be replaced by commodity exchange in due course of time. Finally, the entire economy collapses with dangerous economic and political consequences for the country.

15.8. Effects of Inflation

A period of prolonged, persistent and continuous inflation results in the economic, political, social and moral disruption of society. The effects of inflation can be discussed under two sub-heads: (*i*) effects on production, and (*ii*) effects on distribution.

(i) Effects on Production

The phenomenon of inflation produces a very deep impact on the production of wealth in the economy. Inflation may not always be detrimental to productive activities in the economy. Mild inflation (which may more appropriately be called creeping inflation) may actually be good for the economy, particularly when there are unemployed productive resources in the country. An expansion of money supply in an underemployed economy will result in a slow and gradual rise in the prices. The production costs in such an economy do not increase in the same proportion as the prices with the result that the profit margins of the businessmen continue to increase, creating optimistic conditions in the economy. Encouraged by these rosy conditions, the businessmen increase their investments in productive activities, generating more income and employment in the economy. This process of increased investments and increasing employment continues till the point of full employment is reached. But after the point of full employment of productive resources any expansion of money supply is bound to result in hyperinflation. Thus an expansion of money supply up to the point of full employment may not be harmful for the economy. In fact mild inflation may serve as a tonic for the economy of the country. But any expansion of money supply after the point of full employment will degenerate into runaway or hyperinflation. And hyperinflation as already pointed out above is very harmful for the economy. It creates business uncertainty which is inimical to production.

It is this hyperinflation which has harmful consequences for the economy. In fact, hyperinflation disrupts the smooth functioning of the economy. This type of inflation has the following adverse effects on the productive activities of the country:

(1) Since hyper inflation results in a serious depreciation of the value of money, it discourages savings on the part of the public with reduced savings, the process of capital accumulation suffers a serious setback.

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(2) If the value of money undergoes considerable depreciation, this may even drive out the foreign capital already invested in the country.

(3) With reduced capital accumulation the investment will suffer a serious setback which may have an adverse effect on the volume of production in the country.

(4) The volume of production will not only decline on account of the slowing down of capital accumulation, it may also decline on account of business uncertainty which may discourage entrepreneurs and businessmen from taking business risk in production.

(5) The pattern of production in the economy may also undergo changes under the impact of runaway inflation. This type of inflation may result in the diversion of productive resources from the essential goods industries to the luxury goods industries, creating further shortages of consumer goods for the common man.

(6) Since runaway inflation results in a seller's market, it may lead to a serious deterioration in the quality of goods produced in the economy.

(7) Inflation also leads to hoarding of essential goods both by the trader's as well as consumers. The traders hoard stocks of essential commodities with a view to making higher profits or with a view to selling scarce items in the black market. The consumers also resort to hoarding of essential goods for fear of paying higher prices in the future. They may also hoard essential goods with a view to ensuring their continuous and uninterrupted supply for themselves.

(8) The worst part of inflation is that it gives stimulus to speculative activities on account of the uncertainty generated by a continually rising price level. Instead of earning increased profits out of increased production, the businessmen find it easier to increase their profits through speculative activities.

(9) The most serious effect of inflation is that it disrupts the smooth working of the price mechanism thereby creating an all-round confusion in the economy.

(10) The economic system loses its flexibility under the impact of inflationary forces which have the knack of reducing the motilities of productive resources in the economy.

(11) The worst effect of hyperinflation is that in due course of time it results in a flight from domestic currency on account of its constantly diminishing value. In an advanced stage of hyperinflation, the people lose confidence in their home currency and rush to buy foreign currencies of stabler value to safeguard their assets. In fact, there is a scramble on the part of the people to exchange home currency for foreign currency in the foreign exchange market. Nevertheless, as pointed out above, a mild dose of inflation serves as a stimulant by energizing and activating idle resources in the economy. It induces movement of real resources to the expanding sectors of the economy. It encourages entrepreneurs to make investments in new enterprises which lead to an increase in productive capacity and,

ultimately, in the volume of production: price stability need not be treated as price rigidity. Economic stability, in fact, is consistent with an annual increase of 3 to 4 per cent in the general price level. This produces salutary effect on the economy as a whole.

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(ii) Effects on Distribution

Inflation produces a deep impact on the distribution of income and wealth in society. A prolonged period of persistent inflation results in redistribution of income and wealth in favour of the already richer and more affluent classes of society. The distributive share accruing to the business classes increases much more than that of wage-earning or rentier classes. Businessmen, traders, merchants, and speculators reap rich harvests on account of windfall profits accruing to them as a result of the inflationary rise in prices. Prices under the pressure of inflation rise much more than the production costs. There is always a time lag between the rise in production costs and the rise in the price level. This time lag brings rich profits to the business classes. Moreover, the stocks and inventories of businessmen invariably go up in value because of the constantly rising price level "under the impact of inflation. The business classes, thus, make all-round gains during a period of inflation. The fact of the matter is that the flexible income groups, such as, businessmen, merchants and traders are always the gainers in a period of inflation while the fixed-income groups, such as, workers, salaried employees, teachers, pensioners, etc., are always the losers on account of the inflationary rise in prices. Inflation is always unjust. It is like a steeply regressive tax. Inflation throws the economic burden on the shoulders of those sections of the community who are the least able to bear it.

Effects of Inflation on Various Groups

The concrete effects of inflation on various groups of society are as follows:

1. **Debtors and Creditors:** During inflation, debtors are generally the gainers while the creditors are the losers. The reason is that the debtors had borrowed when the purchasing power of money was high and now return the loans when the purchasing power of currency is low due to rising prices. In other words, the debtors while reaping their debts return less purchasing power to the creditors than what they had actually borrowed. Since the creditors receive less in real teams, they are the losers during inflation.
2. **Wage and Salary Earners:** Wage and salary earners mostly suffer during inflation because wages and salaries generally do not rise in the same proportion in which the cost of living rises. Then there is the time lag between the rise in the cost of living/and the rise in wages and salaries. If the workers and salary earners are well-organized into powerful trade unions, they may not suffer much during inflation, but if they are unorganized or illorganized, as they generally are, they may suffer much as their wages and salaries may not increase at all or may not increase in the proportion in which the cost of living increases.
3. **Fixed-income Groups:** The fixed-income groups are the hardest hit during inflation because their incomes, being fixed, do not bear any relationship

with the rising cost of living. Persons who live on past savings, pensioners, interest and rent receivers suffer most during inflation as their incomes remain fixed while the prices soar high. Inflation, it is said, is also a killer of older, retired people who, with the advent of winter, find their pensions inadequate to buy fuels with their existing fixed pensions.

4. **Entrepreneurs:** Inflation is a boon to the entrepreneurs whether they be manufacturers, traders, merchants or businessmen, because it serves as a tonic for business enterprise. They experience windfall gains as the prices of their inventories (stocks) suddenly go up. They also gain because their costs do not go up as rapidly as the prices of their products. The costs of labour, raw materials and equipments, etc., do not catch up with the rise in prices of products. Inflation converts the entrepreneurs into 'profiteers' who put the community to ransom through their profiteering and hoarding activities.
5. **Investors:** Investors are generally of two types: (*i*) investors in equities (shares), and (*ii*) investors in fixed interest—yielding bonds and debentures. Inflation bestows favours on the former and is rather harsh on the latter. Dividends on equities increase with the increase in prices and corporate earnings and as such, the investors in equities are favourably affected. Incomes from bonds and debentures, however, remain fixed and as such, investors in them are adversely affected. The small middle-class investors generally invest in fixed interest yielding bonds and securities and therefore, have much to lose during inflation. Frequently, they find their savings' largely, if not completely, wiped out as a result of the depreciation in the value of money. The rich-class investors, on the other hand, invest in equities on which the dividends go up during inflation and are thus beneficially affected.
6. **Farmers:** Farmers are generally the gainers during inflation. The price of farm products go up while the costs incurred by them (the farmers) do not go up to the same extent.

Further, there is generally a time lag between the rise in prices and the increase in costs. Moreover, the farmers are generally debtors and can repay their debts during inflation in terms of less purchasing power. It should, however, be remembered that small farmers do not gain as much from high prices as the big farmers do, because the former do not have a considerable surplus to dispose of in the market.

Thus, inflation redistributes wealth and income in such a manner as to injure the interests of consumers, creditors, salary and wage earners, fixed-income groups, small investors, and to favour businessmen, merchants, traders and farmers. Socially, inflation is unjust. It transfers wealth to those sections who have already too much of it.

15.9. Non-economic Consequences of Inflation

It needs hardly to be said that inflation has far-reaching social and political consequences for society. As already pointed out above, inflation is socially unjust and inequitable for society, because it redistributes income and wealth in favour of those

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classes and sections who are already affluent and well-off. This creates a sense of grievance and heart-burning in those sections of society which are adversely affected by inflation. This naturally leads to social conflict in society which can have very serious political consequences for the country in question. Besides creating political instability, inflation also deals a serious blow to business morality and ethics. The lure of quick profits results in a serious deterioration in the quality of products, besides tempting the businessmen to resort to adulteration and other anti-social tactics to boost up their profits. The general morality of the people in the country also suffers a serious decline with the resulting all-round corruption in the country. This leads to general discontentment in the public which may result in loss of faith in the integrity and honesty of the government. This discontentment very often creates an explosive political situation, preparing the ground for the establishment of a fascist regime in the country. It is pointed out that Hitler's rise to power in Germany was the direct outcome of the post-war inflation of the 'twenties'. Inflation, thus, not only disrupts the smooth functioning of the economy but it also prepares the ground for social and political upheavals.

Apart from these general evils, inflation poses a serious danger to underdeveloped countries. As is well known, an underdeveloped country needs huge capital resources for its speedy economic development. But inflation, by discouraging savings, slows down the process of capital accumulation in the economy. Inflation not only reduces domestic capital accumulation, it also discourages the inflow of foreign capital into the country. With reduced capital resources, an underdeveloped country finds it difficult to step up its economic development. Inflation also discourages production by tempting the businessmen to resort to speculation, because speculative activities bring them rich dividends than productive activities.

15.10. Need for Action

The above study of inflation and its harmful consequences serves to emphasize the need for adopting a prompt and effective anti-inflationary policy on the part of the government. As pointed out by Prof. Koriyama, the consequences of following a policy of laissez-faire with respect to persistent inflation would be dangerous indeed. Every inflationary boom, left unchecked, has within itself the seeds of a pending depression. An uncontrolled inflation soon sets in motion certain forces which, if unchecked, would land the economy into a serious slump with all the consequences flowing from it. Let us now analyse those deflationary forces which inevitably accompany an inflationary boom at its height.

1. Fall in Consumer Demand

An uncontrolled inflationary boom invariably results in a decline in aggregate consumer demand for two reasons. Firstly, under the impact of inflation, the distribution of income and wealth undergoes a change in favour of the rich and against the poor. This shift in money income from the poor (with a high propensity to consume) to the rich (with a low propensity to consume) adversely affects consumer demand. Secondly, the adverse psychological effect of reduced real income also serves to depress the demand of the consumers. A serious reduction of real income automatically induces a cautions attitude on the part of consumers who now curtail

their demand for consumption goods to the minimum, consistent, of course, with the maintenance of health and working efficiency. The demand for durable consumer goods receives a sharp setback and adversely affects not only the consumer goods industries concerned directly, but also the connected capital goods industries. As a consequence, the consumer demand may fall too low to permit the absorption of the entire output. This may usher in the muchdreaded slump.

2. Fall in Investment Demand

An uncontrolled inflationary boom invariably results in a decline in investment demand. Firstly, during inflation owing to the rosy conditions prevailing in business circles, more investment might take place than is warranted by the needs of the situation. This overinvestment coupled with a reduction in consumer spending soon sets in motion certain forces which increase business uncertainty and diminish profitable investment opportunities in the future. As a consequence, anticipatory purchases of inventories (stocks) receive a setback. Secondly, the price-wage spiral accompanied by a short decline in consumer spending breeds additional uncertainty and spreads pessimism. Yet businessmen refuse to reduce prices in response to falling consumer demand or to accept lower profit margins with the result that markets weaken, giving rise to a recession in income, output and employment.

3. Fall in Foreign Demand

An uncontrolled inflationary boom will also invariably lead to a decline in the demand for the goods of the country in foreign lands. This decline in foreign demand may be due to the too high prices of exported goods owing to domestic price inflation. The decline in foreign demand unless offset by a corresponding increase in domestic demand, will have the effect of reducing output and employment in export industries, with a spreading impact on the entire economy of the country concerned. A decline in foreign demand will contribute to a depression of domestic business activity via the reverse operation of the foreign trade multiplier.

The above discussion, thus, highlights the necessity of quick, prompt and effective action on the part of the government to check and control the inflationary boom before it is too late, failing which it shall soon degenerate into a slump accompanied by mass unemployment and economic distress.

15.11. Inflation in an Underdeveloped Economy

We have seen above the character of inflation in a developed economy. Let us now examine the nature of inflation in an underdeveloped country. Inflation in an underdeveloped country is slightly different from inflation in an advanced country. As we have seen above, inflation in an advanced economy generally sets in only after the point of full employment is reached. (According to Keynes, inflation may sometimes set in before the point of full employment even in an advanced economy due to increases in money wages, shortages of raw materials and equipment, and the operation of the law of diminishing returns. But, generally speaking, inflation sets in, in an advanced economy, only after title point of full employment is reached. Keynes calls it as true inflation). But in an underdeveloped economy, inflation generally sets in earlier than the point of full employment. In an advanced economy, increases in money supply result in the mobilization of idle resources instead of leading to a rise

in the price level. But in an underdeveloped economy, due to the limited and inelastic supply of resources, increases in the money supply invariably result in a rise in the price level. Keynes calls it as bottleneck inflation, which sets in even before the point of full employment is reached.

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There are certain additional causes for the early setting in of inflation in an underdeveloped country. As is well known, an underdeveloped country generally incurs huge public expenditure to quicken up its planned economic development. In its developmental projects, the emphasis is generally laid on social overheads and basic, heavy industries rather than on the development and expansion of consumer goods industries. Since the production of consumer goods does not keep pace with the expansion of money income, it invariably results in an inflationary rise in the price level.

Besides, the marginal propensity to consume of the people in underdeveloped countries is generally high with the result that the farmers in these countries do not bring the entire agricultural surpluses in the market for sale. The high demand for consumer goods naturally pushes up the prices of these goods. Further, the underdeveloped countries are generally primary producing countries. A good part of these primary products is exported to foreign countries, creating additional shortages of these goods in the country.

An important peculiarity of these underdeveloped countries is the large magnitude of disguised unemployment that prevails there. Unfortunately, this disguised unemployment and underemployment is not so readily responsive to an expansion of money supply or increased effective demand. Despite the increase in the supply of money, the output of goods and services does not increase so readily on account of the existence of disguised unemployment and underemployment. In developed countries, on the contrary, the existence of unemployed manpower actually helps in increasing the output of goods and services consequent upon an expansion in the supply of money. The immobility of productive factors, the rigidity of social structure and the ignorance of market conditions are other factors which act as obstacles in increasing production.

In view of the underdeveloped character of the banking and credit institutions, it is more difficult to deal with inflation in an underdeveloped than in a developed economy. The physical and credit controls in an underdeveloped economy are not as efficacious as they are in an advanced economy so far as the curbing of inflation is concerned.

From the above discussion, it is apparent that an underdeveloped economy is placed in a difficult position. In fact, it is confronted with a dilemma. If it remains as it is, it means economic stagnation, poverty, low incomes and low living standards. If on the other hand it launches upon rapid economic growth through deficit financing or expansion of bank credit, it results in the emergence of inflation, inflicting untold misery on the poor people. The choice, therefore, is between economic stagnation and inflation. Inflation, however, is the lesser evil. An underdeveloped country should go in for rapid growth, even though it may bring some inflation its wake. Inflation is perhaps the price which underdeveloped counties have to pay to attain rapid economic growth. This does not, however, imply that inflation is an inevitable consequence of the process of economic growth. It can be forestalled through the adoption of

a well conceived and well-executed anti-inflation policy by the government of an underdeveloped country.

15.12. Inflation and Economic Development

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There is a great controversy among economists as to whether inflation promotes economic development. There is a group of economists, including Keynes, which are of the view that inflation promotes the economic development of a country. The following arguments are advanced by these economists in the support of their contention.

(1) The first argument adduced by these economists is that inflation redistributes income and wealth in favour of the entrepreneurial classes who have a high propensity to save or low propensity to consume. With the redistribution of income and wealth in favour of these classes, the rate of savings is automatically stepped up, leading to a higher level of capital accumulation in the economy. These classes utilize their increased savings for further investments in productive enterprises, thereby increasing the aggregate income, output and the volume of employment in the economy.

(2) Inflation invariably creates optimistic conditions in the economy and affords fresh opportunities for businessmen and the entrepreneurs in new productive enterprises. Since the costs do not rise as rapidly as prices, the profit margins of the businessmen go up, tempting them to make more and more investments in new industrial enterprises.

(3) An underdeveloped economy, as is well known, is generally short of financial resources which act as an obstacle to its economic development. There is little scope for additional taxation in such an economy on account of the low income of the people. Nor is there much scope for public borrowings as the level of savings in such an economy is rather low. This poverty of financial resources in an underdeveloped economy can be made good to some extent by resorting to deficit financing to cover the deficit in the government budget. Deficit financing can provide adequate funds to the government of an underdeveloped country for launching development projects for quick economic development. There may be no harm in resorting to deficit financing for economic development, because inflation initiated by this type of deficit financing is self-terminating on account of the expansion in output which accompanies deficit financing for development purposes. This deficit financing may not be harmful to an underdeveloped country from another point of view as well. There is, generally, a tendency on the part of the people in such a country to hoard money underground. Deficit financing will result at least in the initial stages in offsetting or neutralizing this hoarding tendency of the public in an underdeveloped country. There shall, therefore, be no rise in the price level at least in the initial stages of deficit financing, which has an important place in the economy of an underdeveloped country.

(4) There is no doubt that there will be some inflationary rise in prices at least in the initial stages consequent upon deficit financing in a developing

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economy. The reason being that the supply of consumer goods in such an economy does not increase as rapidly as the supply of money in the initial stages of deficit financing. Thus, inflation becomes somewhat inevitable in the process of economic growth. In fact, economic growth and inflation generally go together. Inflation leads to economic growth, and economic growth, in its turn results in inflation.

There is another group of economists headed by Prof. Milton Friedman which believes that inflation in no way promotes the economic development of a country. The following arguments have been put forward by these economists in support of their contention.

(1) Inflation, it is pointed out, distorts the saving habits of the people and slows down the rate of capital accumulation in the economy. Inflation may even drive out the foreign capital already invested in the economy. There is, of course, no possibility of foreign capital coming into an economy which is suffering from persistent and prolonged inflation. It goes without saying that the process of economic development is bound to suffer a serious setback with a slowing down of the capital accumulation in the economy.

(2) Inflation, as is well known, by leading to a continuously rising price level, puts a premium on speculative activities. The businessmen find it more profitable to speculate in certain scarce commodities rather than to increase their existing production. With the businessmen resorting more and more to speculative activities, the production of goods and services in the country suffers a serious setback.

(3) Inflation, by leading to a rising price level, invariably reduces the volume of exports from an economy. Not only that, it also increases the volume of imports into the country. The reduction in exports and the increase in imports invariably reduce the volume of domestic output and employment thereby slowing down the economic development of the country in question.

It is, thus, the considered opinion of these economists that inflation in no way promotes the economic development of a country. The question, as we have seen above, is rather controversial. But, in our opinion, inflation by increasing the national income, output and employment may, on the whole, be said to be a factor which directly and indirectly promotes the process of economic development in the country.

15.13. Summary

- An increase in the price level in the midst of depression is inflation and has no harmful effects on the economy. On the contrary, it serves as a stimulant for the revival of the economy.
- "Inflation is too much money chasing too few goods."
- Inflation is based on the quantity theory of money. According to this approach, it is the increase in the quantity of money which causes an inflationary rise in the price level.
- According to them, "Just as the price of any good is determined by the

demand for it and the supply of it, so also the general price level is determined by the total demand for and total supply of the group of goods concerned." Thus, according to this approach, inflation is that situation in which the total demand for goods exceeds the total supply of goods at current prices. The sole cause of inflation, according to this approach, is the existence of a persistent excess demand in the economy.

- There are two main causes of inflation: (*i*) an increase in effective demand, and (*ii*) an increase in production costs.
- It needs hardly to be said that inflation has far-reaching social and political consequences for society. As already pointed out above, inflation is socially unjust and inequitable for society, because it redistributes income and wealth in favour of those classes and sections who are already affluent and well-off. This creates a sense of grievance and heart-burning in those sections of society which are adversely affected by inflation.
- There is a great controversy among economists as to whether inflation promotes economic development.
- That inflation redistributes income and wealth in favour of the entrepreneurial classes who have a high propensity to save or low propensity to consume.
- Inflation invariably creates optimistic conditions in the economy and affords fresh opportunities for businessmen and the entrepreneurs in new productive enterprises.

15.14. Review Questions

1. What are the various types of inflation ?
2. Inflation is a phenomenon of full employment. Explain.
3. How did Keynes explain the phenomenon of inflation in terms of his concept of Inflationary Gap?

   Or

   Explain the Keynesian Theory of Inflationary Gap.
4. Outline a program of action to control and check an inflationary situation in an economy.
5. "Inflation is unjust; deflation is inexpedient. Of the two, deflation is worse." Explain.
6. Explain the causes of price inflation. Can inflation promote economic development?
7. What are the causes of inflation? What measures are needed to control inflation?
8. How does inflation affect the production structure and income distribution in an economy?
9. "Inflation in India is primarily a structural and not monetary phenomenon." Comment.